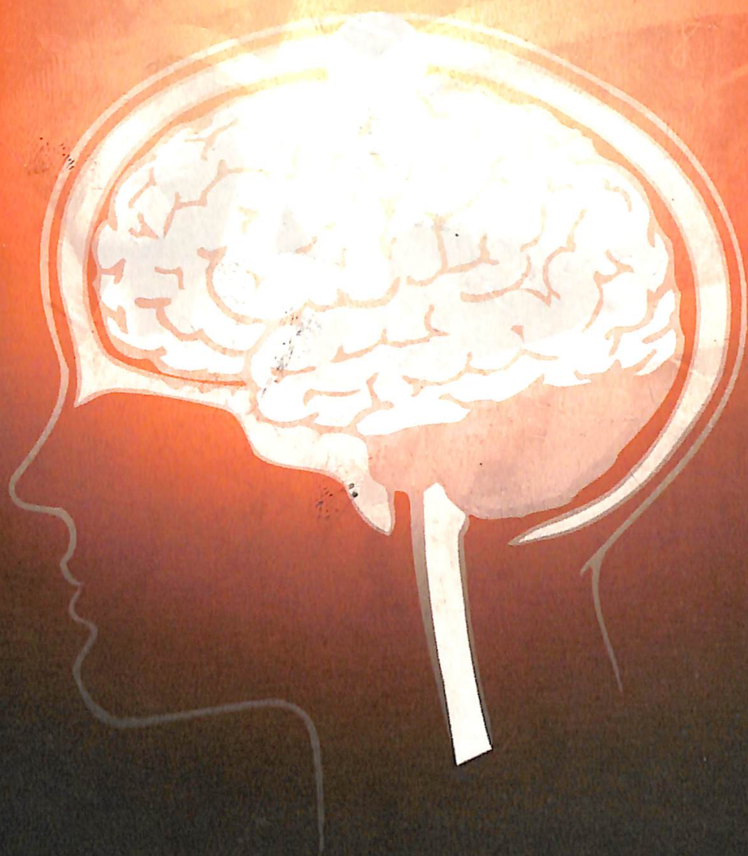
Human Brain
Apparent Boon of the Omnipotent



– Pandit Shriram Sharma Acharya

HUMAN BRAIN

APPARENT BOON OF THE OMNIPOTENT

(Mānvī Mastiṣka : Pratyakśa Kalpa Vr̥akśa)

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PREFACE

Human-body is the most evolved and marvelous creation of nature. Every component — from organs to nerves, muscles, tissues, cells, molecules and subtler functional units of this living system reflects the limitless excellence and absolute perfection of the Omnipotent eternal creator. The crown organ — brain is the sole regulator of this arcane automatic system. Because of its wonderful memory unit, nonstop multiple activities of information processing, learning, computing and decision making, etc almost instantly, the human brain is often referred as the supreme computer which is the most remarkable 'product' of nature's eternally advanced technology. The intellectual and sentimental domains of consciousness pertain to its subtle counterpart — the mind.

The present book is compiled from the first chapter of volume eighteen of Pt. Shriram Sharma Acharya Vangmaya series. It introduces the neuroscientific, psychological and spiritual aspects of human brain and mind. Bioelectrical activities of the neuro-synaptic connections between million billions of neurons, information processing through the nervous system and the neuronal network and the mechanism of storage and retrieval of memory are discussed here along with the anatomy of the human brain and psychological depths of human mind. Major sections of this book deal with detailed analysis of the *endocrine system* and the interrelationship of hormonal secretions and physiological, biochemical, mental and emotional variations.

Trends and achievements of research in neurosciences are also highlighted here with relevant reference to the experimental findings. The subtle connections between the endocrine glands and the extrasensory power centers — described as *ṣaṭ cakras* and *granthis* in the Indian scriptures — are elucidated and guidelines are offered towards spiritual endeavors (*sādhanās*) of activating these centers.

Few people seem to know that the left and right components of the human brain largely work independently and complementarily. The principal role of the left side brain consists of motor control and

regulations of other bodily activities. The right side brain — also called the "philosophical or religious brain", conducts the sensory functions and the sensitive mental processes pertaining to — thinking, imagination, artistic creativity and the soft sentiments like compassion and devotion, intrinsic faith and emotional inclination etc... The author adeptly guides how the balanced activities and harmonious linkage between the two halves of the brain leads to multifaceted development of personality.

The book also offers scientifically argued, lucid answers to some of our natural inquisitiveness concerning — What are the functional centers in the brain, which might be responsible for exceptional memory? What triggers our sentimental dynamics? What accounts for gifted brains? How to arouse the hidden potentials of mind...., etc? Hope it would inspire us to move deeper in the depths of the 'esoteric treasure' bestowed by the Supreme Consciousness on our brain.

-Dr. Pranav Pandya, MD

HUMAN BRAIN — APPARENT BOON OF THE OMNIPOTENT

(*Mānvī Mastiṣka : Pratyakśa Kalpa vṛakśa*)

CONTENTS

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Shriram Sharma Acharya, a pioneer of spiritual renaissance was born on 20th September 1911, in Anwalkheda, Agra District. He scrupulously carried out the biddings of his *Guru*, a great *Himalayan Yogi*, when he was fifteen years of age.

He took part in the struggle for independence as a volunteer, went to jail a number of times and embarked upon the task of social and moral upliftment through spiritual means in 1935 with the blessings of Mahatma Gandhi.

A sage, a visionary and a reformer, the Acharyashri initiated 100 points *Yug Nirman Yojna*, lived a disciplined life of devout austerity, visited the Himalayas several times and attained spiritual eminence.

The *Gayatri Pariwar* fraternity; Shantikunj Ashram— an academy for for moral and spiritual awakening; Brahmavarchas Research Institute— which strives to synthesize science with spirituality and over 3000 social reform centres (*Shaktipeeths*) are his greatest contributions to the modern world.

He translated the entire *Vedic Vangmaya* and accopmplished a feat of writing more than 2700 books on all aspects of life.

Acharyashri, Great devotee of *Gayatri* lived an ideal life for 80 years and voluntarily shed his physical sheath on *Gayatri Jayanti*, 2nd June 1990.

The Omnipotent Role of Human Brain

The living state of a human body consists of the five basic elements called *panca tatvas*[1] and the five basic streams of vital force called *panca prāṇa*. The *panca tatvas* constitute the physical body and the *panca prāṇa* create the mental (subtle) body. The flow of electricity in a circuit is generated by the connection of the two complementary — positive and negative types of currents. The lifecycle of a human being also continues to revolve with the help of the two 'wheels' of the physical and mental bodies. The collective contribution of these components is unparalleled in Nature.

The known, as well as the undeciphered, structural and functional features of the human body are enormous. Deeper analysis of these brings out more and more amazing results and shows newer layers of mysteries in this splendid action of the Almighty. The structural complexity, functional adaptability and potentials of different sense organs give a glimpse of the magnificent systems that could be constructed in the *jaḍa* (material) part of nature. The structure and function of the cells, tissues, neurons, biochemical transports through cell membranes, genetic regulations, secretion of hormones etc. all appear like the unlimited activities of a mysterious wonderland. The marvelous functioning of the internal organs — like heart, liver, kidneys etc., gives an impression as if the essence of all the knowledge and power existing in Nature has been perfectly used by an absolutely efficient 'engineer' in the construction of the human body.

In normal course, the human body performs only the routine tasks, which are essential for its survival. However, if given a chance — with appropriate training and control, this natural instrument could be used to conduct supernatural activities. The hilarious performances of great personalities in different fields of history prove that this small body of flesh and bones contains tremendous power. This power generally remains dormant and is therefore not manifested in most people. If awaken, this latent power grows and expands like a huge tree from a tiny seed. Its focused development cultivates supernatural capabilities in the targeted components of the body.

The automatic regulation and use of the instrument made up of the *panca tatva* becomes possible by the consciousness generated from the *prāṇa*. The *cetanā* (consciousness) of a human being is the 'driver' of the vehicle of his body. The splendid structure of the body is of no use if there is no *prāṇa* in it. Maintenance of healthy survival of the body and efficient use of its potentials depends on the level of one's *cetanā*. Even a slight imbalance in the *cetan* or disharmony between the *cetan* (mind) and the *jaḍa* (physical) body might cause irreparable loss in terms of physical and mental health. Although the body of a lethargic, foolish or insane person is normal and healthy, his waned *cetanā* may disturb his life drastically — leading to untoward consequences.

The tendencies and manifestations of the *jaḍa* (material) and *cetan* (conscious) components of nature are entirely different. The commingling of the two however, gives rise to a third stream of power which is very specific and even super seeds the potentials of its individual constituents. As the combination of two chemicals transmutes both and produces a third — a new chemical, the combination of *jaḍa* and *cetan* similarly manifests itself into a unique creation — such as, a human being.

The power of *cetanā* is present in every organ, every cell of the body. However, the center of its functional manifestation resides in the core of the brain. Although the chemical constituents and the biochemistry of the molecular interactions in the brain are comparable with those in the other organs, the flow of the bioelectricity of *prāṇa* in the neuronal network inside it makes it superior to all other components of the body. The spontaneous activities inside this regulator of human body are so complex and large in number that it can be called a Pendora's box — full of mysteries. The human brain is a magical creation of the Omniscient. The varieties of tasks simultaneously performed by this system in short time intervals of millisecond-to-millisecond, indicate the presence of the Supernatural Power of the Almighty in a worldly creation.

The routine functions of human brain include auto regulation of motor and sensory activities and central control over the functioning of the other organs. It also serves as the central processor of bio-electrical activities and information processing across different parts of the body via the nervous system. In other living beings the entire amount of consciousness is used for the purpose of bodily activities. However, in humans the level of consciousness used for the above functions of auto regulations and information processing is very small. It is only a tiny fraction of the huge reservoir of *cetanā* eternally stored in the human brain. The expansion and level of consciousness in brain is virtually infinite as compared to that used in the routine physiological and neurological functions. If unutilized, this potential of brain gets waned and remains dormant....

There lies a gigantic treasure of the visible and latent powers in the core of nature. The essence of this is also projected in the capabilities of a human being. The *jīva* (soul manifested in individual consciousness) is endowed with the subliminal streams of *prāṇa* emerging from the cosmic ocean of the omnipresent consciousness of the *Para Braham* — The Omniscient, Eternal, Supreme Creator. The seed of all the powers of the *cetan* component of nature are present in the *jīva* in a subtle form. The brain is regarded to be the core of the existence and manifestation of this enormous potential of the *jīva* in a human being. The structure and functions of the human brain represent a splendid combination of the *jaḍa* and *cetan* which gives rise to the flow of specific bio-electrical currents — emanated from the streams of *prāna*.

Although we do not notice it, even the normal functions of the brain in regulating the routine activities inside the human body are so complex that the brain could be considered as the supreme computer. Its natural functioning in maintaining the day-to-day activities of the body and mind might appear as ordinary to some people. But, the scientists and thinkers know that it is indeed an extraordinary organ; there could be no sophisticated processor or device developed by advanced technologies which would ever reach the efficiency of this system.

The non-routine functions of the human brain are more amazing. Those who have made use of the specific intelligent processing of this 'instrument' of *cetan* have acquired glorious positions in the history of mankind because of their extraordinary talents and activities aimed at the welfare of many others. Eminent literary persons, poets, artists, philosophers, scientists, *yogis, rishis* — the spiritual masters, super natural personalities....., all attain the superior qualities, talents and expertise because of rousing the specific faculties of their brains.

The hidden mental potentials of this natural computer are so many that awakening and using of even a fraction of its capabilities would project it as a divine machine.

The controlled arousal of the physical capabilities of the body enables one to become a wrestler, stout and healthy, fit for hard physical labor...etc. Such people may enjoy a long healthy life. However, the accomplishments of using the special faculties of brain are more astonishing. They may awaken supernatural talents in ordinary humans. Experts of neurology and mental sciences believe that even the exceptionally intelligent scholars and significantly talented people, in general, use only about 7% of the real potential of their brain. The rest 93% largely remains dormant and unnoticed. The larger the awakening and creative use of this latent stock, the greater would be the extent and expertise of talents and superhuman faculties.

The *jaḍa* component of nature is unsystematic and noncreative because it does not have intelligence. Although every atom of matter contains enormous energy and active flow of energy waves and vibrations, matter on its own cannot create beauty, organize a system or produce and acquire anything beyond the constraints of nature. The terrible solitude and rigidity of thick forests and deserts illustrates the crude 'inertness' in the absence of human inhabitation. The ever-active motion of planets is an event less routine and the environment on these cosmic bodies remains dreary and devoid of any creativity or novelty in the absence of an intelligent being. Our earth, despite being tiny in size as compared to many stars and planets, enjoys a special status in the solar system because of the exist-

ence of life on it. Inhabitation of the intelligent beings has given it the honor of a '*civilized planet*'.

Human intelligence has made tremendous use of the natural resources available on the earth. Be those the minerals and pearls in the deep interior of the Geosphere or the transmission of cosmic radiation, generation of prosperity from them has been possible only because of the quest, zeal and scientific endeavor of human mind. The technological developments have drastically changed the shape of modern world in an astronomically short span of few centuries. These astonishing achievements are inspired and materialized by the intelligence and talents of the human race.

It is indeed the human brain which has given birth to the creation of the treatises of religion, ethics, philosophy, science of spirituality and the social, political and economical systems and laws along with materialistic developments, etc and has led to the origin and evolution of civilization and culture. Without the use of its brain, the human race would have been no better than the other members of the animal kingdom. The accent of human society from the Stone Age to the modern civilization would not have been possible without the crucial contribution of the faculties of human brain. The facilities of – – agriculture, horticulture, husbandry, handicraft, business, medicine, transportation, communication, electricity, water supply, housing, entertainment, art, literature, and multifaceted scientific and technological developments, are obvious boons of the *kalpa vṛakśha* existing in the form of the human brain.

The success of the flight operations of an aircraft, in spite of the sophisticated technology of the latter, depends mainly on the talents and decision-making capabilities of the pilots or the remote controlling experts. Natural resources of the earth, air, ocean, sun, etc, are wonderful. But, the credit of their creative use goes to the human skill only. Even the existence of God and life after death are, for many people, the creations of the imaginations and convictions of the human brain. An argument in support of the latter statement is – – whatever exists in the cosmos is uniformly available to all living

beings. Other creatures do not have any experience of God, nor do they have any system of morality and religion etc. In that case, it appears that only humans do so because of their intelligence. Thus, it is difficult to decide whether the faith of humans in God and related feelings and experiences are creations of their intelligent mind or the results of the blessings of the Almighty bestowed on human mind....

We do not want to indulge in such debates at this juncture. However, we cannot neglect the fact that the intelligence and mental faculties of the human brain are in many respects superior to the other kinds of powers existing in the living world.

The personal and social life of a human being is glorified by the mental faculties of his brain that are reflected in modesty, respect for fellow beings, ambitions of rise and progress, sentiments of love and compassion etc. The artistic touch in the decoration of the body — hairstyle, makeup, dressing and mannerism demonstrate his sense of beauty inspired by mind. Without this sense, the men and women of today would also have been living half-naked in bleak conditions like their ancestors of the Stone Age. The untidy growth of hair would have given them a wild like appearance if they had not used their brains to maintain and arrange their hair in a comfortable and artistic manner. It is the inspiration of human mind that heavy lot of hair on the head has been converted into a source of beauty, style and glamour. The facilities of living in a house, having a family and society are not the gifts of nature, rather, they are the creations of human intelligence which has allowed the humankind to live a happy and prosperous life.

Every field of civilization, every aspect of human life, demonstrates the predominant role of mental faculties. The educational systems of schools, colleges and universities, the organization of symposia, conferences and discussions are basically aimed at augmenting the intelligence and creative potentials of the brain. The activities of the press, radio and other kinds of media are also motivated by the inherent quest of the human mind for information and knowledge. Hard work of participation in competitive exams and enjoyment of

tourism also share one thing in common viz., sharpening of intellectual abilities and increase in knowledge. Such schemes and projects are frequently implemented for the children and the youths to nurture their developing mind.

Intelligence weighs and values more than wealth. An intelligent, thoughtful or learned man or woman has the potential to solve the problems of personal and social life. His/her talents could be used for the benefit of large number of people. Resolution of the problems of the present and constructive planning for the bright future becomes possible by the foresighted discerning intelligence. Further refinement of the latter links it with spirituality. The supreme level of acumen, pure intelligence, afflatus and absolute discreetness of mind is described in the spiritual scriptures as *ṛatambharā pragyā*. The *Gāyatrī Mantra* is considered to be a symbolic representation of the eternal deity of *pragyā*. Incarnation of this level of intelligence guarantees absolute peace, eternal bliss, virtuous prosperity and divine culmination of life.

The civilization and cultural developments acquired in the modern age, as described above, are the outcomes of the efficient use of only about 7% of the powers of the intellectual and scholarly brains since the present and past few centuries. This is a worldly use of the awakened power of the human brain. About 93% of its capabilities still remain unused. This hidden potential is about 13 times more than the creative power of brain ever used by the most intelligent person of the present era. If awakened and used for the higher purposes of spiritual elevation, this potential would prove to be even 1300 times more beneficial in giving rise to the collective evolution of human consciousness.

As the level of the *cetan* sublimates, the human mind gets attracted towards greaters ideals of humanity and realizes the need for rousing the inner strength. In the subtle states of consciousness the brain begins to unravel the domains of spirituality. However, only a handful of people reaches up to this awakened state. In a vast majority the activities of the brain revolve around the ever-increasing desires for

materialistic gains and sensual pleasures and the egoistic ambitions. The aspirations of such people reflect the infancy of their intellect. Creative motivation and determined efforts towards a goal, even if it is triggered by ambitions, certainly makes more use of the brain-energy as compared to that in regulating the normal motor and sensory functions of the body. Still it is negligible in view of the real potential of the human brain. Higher level quests and aspirations of elevation stimulate further activities of the brain. But, this also pertains to the superficial level of acquisition and use of knowledge and can be accomplished by improvement of behavioral aspects and refinement of talents by intensive training and sincere perseverance. This cannot reach the deeper layers of consciousness and mental faculties, which are unraveled by the spiritually elevated scholars and *yogis*.

The intellect of a spiritually enlightened person gradually reaches the level equivalent to that of the *siddha purūśas*, *rishis* __ the perfect beings. If these aspects of human brain are considered, the coliseum of developments and advancement of civilization of the modern era would appear like a child's play. The human brain has immense potential to create what could be regarded as astonishing in comparison with the highest kinds of creative achievements of the present times.

The spiritual practices (*sādhanās*) described in the ancient Indian scripture were devised as experimental methods for systematic training towards the realization and rousing of the otherwise dormant capabilities of the brain. An ordinary person can reach the exceptional levels of great personalities, saints, and *rishis* with the help of disciplined and dedicated endeavors of *sādhanā*.

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 **Extraordinary Potentials of Our Brains**

The tiny 'bag' of the human brain contains an eternal treasure, which if used cautiously, can offer the accomplishments and bliss of a divine life. However, no valuables would be of any use, unless one recognizes their worth and mode of application. For example, if a tribal who has never seen or heard of any jewel finds a precious diamond on a street, he will not be able to make any fortune from it. Similarly, for a child a pearl would be no better than a shining stone and he would throw the pearl away after playing with it for a short while.

That, conscious mind in the brain can think — is well known. The tasks of reading, writing, learning and teaching are also performed by it; this way its potentials are normally used for sustenance of livelihood and worldly success. If one seeks deeper insight and thoroughly links one's thought process with the eminence of truth and purity of knowledge, one might acquire some day, the honored status of a saintly scholar or a revered erudite. This could be accomplished even if he or she does not possess any material wealth or higher social status.

The root of inspiration is also contained in the core of the brain. The direction of thinking is guided by this inner power which in turn governs one's behavior and deeds. Looking at one's lifestyle, mannerism and activities, we can easily infer the level and direction of his thinking. In short, one's character and life is largely shaped by his thoughts, by the inspirations of his mind.....

Unraveling still deeper layers in the core of the brain would show a greater reservoir of the 'gems and pearls' of astonishing powers. Realization of this source of immense potential and cautious attempts to channelize and make use of the associated streams of mental and spiritual currents can elevate one's life from an ordinary to an extraordinary, glorious level.

In terms of structure, physiology and biochemistry, the human brain appears to be a living reservoir of electrical power instead of an

organ made up of flesh and bones. Its millisecond-to-millisecond activities compare with that of a huge (electrical) power station. It seems as if God has kept a magical box in the compact basket of the skull. The sensitivity, creativity and level of consciousness of the brain is so high as compared to the other organs of human body that one could consider it as the core of the very existence of a human being.

At functional level, a human brain has two parts. One, that encompasses the activities of the mind and the intellect. The faculties of thinking, logic, analysis and decision making etc are governed by this part. The other part stores the memories, habits and inherent tendencies; this part also controls the motor and sensory functions of the body. Blood flow through the veins and arteries, consistent pumping of the heart, maintenance of the respiratory cycle, compression and expansion of the muscles, automatic twinkling of eyelids, regularization of metabolism, sleep, hunger, urination, motions etc, — are all activated and controlled continuously by the unconscious mind existing in the latter half of the brain. This could be termed as the latent mind.

Each organ of the body is like an instrument, which is well equipped with sophisticated components. But, none of these can function automatically without the supply of energy and regulatory instructions from the unconscious mind. Despite extensive research on human brain, much of it, especially the unconscious mind still remains undeciphered.

The conscious mind sleeps during the night. It faints due to intoxication or anesthesia. In an instance of local anesthesia — when a particular portion of the body is temporarily made unconscious, the nerves connecting this organ with the conscious portion of the brain are inactivated. Thus, the signals of pain induced by a surgical operation of that particular organ do not reach the conscious mind and so the operation is performed painlessly. It is the conscious mind that gets agitated or excited and suffers from mental disorders.

Treatments in the mental hospitals are focused at the patient's conscious mind only. Medications of psychiatric diseases comprise of targeting and controlling this conscious faculty of the brain with respect to specific damage or abnormality. Though substantial progress has been made in understanding, regulating and refining the conscious mind, the researchers of psychology and neurosciences have so far analyzed only negligible fraction of the unconscious (including the subconscious and super conscious) mind. The autoregulation, physiological and other bodily functions are found to be normal in an insane person who is otherwise healthy. Such observations show that insanity or disorders of the conscious mind have negligible effects on the autoregulatory activities of the unconscious mind.

The brain processes its functions with the help of a complex network of nerve cells —*neurons*. There are about 10^{10} (thousand billion) – – which is almost double the total human population on the earth! – – *Neurons* in this network. The connecting nerve fibers and insulating materials are also filled within the skull. The neurons are scattered in the brain like a galaxy of billion- trillion stars (sources of energy), which instead of gravitational attraction, are connected by synaptic fibers. The diameter of a neuron is lesser than one thousandth part of an inch and its weight is of the order of six thousand billionth part (6×10^{-10}) of an ounce. The bio-electrical currents flowing between the neurons via the nerve fibers carry the information in the form of signals (impulses) from the sense organs to the brain and stimulate appropriate activity in the nervous system. An axon of a neuron is a tiny fiber like structure, which is connected with the other neurons. The functional brain is a complex network of the synaptic connections between the neurons.

The gigantic collection and networking of the thousand billion neurons posses astonishing powers of a divine giant..... The tiny neurons, despite their negligible size and weight, contain the potentials of a complete human being. Humans could be dull, careless or inactive but, the neurons are not — they are never waned or weakened in their normal lifetime; nor do they leave their efficient processing. Some portions of the *neuronal network* store — like a microfilm,

the memories of ages.... Even, what might appear to be a forgotten matter at the superficial level of our active memory, is actually not lost from the registers of the brain....; its inscriptions remain stored in the hidden layers in some corner of our brain and, like the sudden growth of grass, the flashes of the forgotten matters or events are revived in the active memory as and when an opportunity arrives by the stimulation of the associated portion of the neuronal network. Dr. Penfield, a neurologist of Canada had activated some memory cells of a patient by transmitting electrical impulses. To his surprise, the patient narrated the story and songs of a film as if he has just seen it; though, in fact, he had watched that movie about twenty years ago.

Examples of extraordinary memory of some people often illustrate the immense power of the human brain. The sharp intellect and spontaneous decision making in some people is so remarkable that they appear like "super humans". People having extraordinary talents are not some exceptional beings who are endowed with such divine gifts. In fact, the seed of such faculties lies in the brain of every human being. In some people it is inherently sprouted and grown significantly to manifest supernatural talents. However, it might blossom in the others too if cultivated by dedicated efforts.

Dr. Penfield's research on human brain has shown that it has the normal capacity of storing (memorizing) as many bytes of knowledge as could be contained in over 20,000 printed pages of a journal. On an average, a person views about hundred thousands scenes of visual objects. Along with the visual perceptions, his brain also helps in the recording and recognition of the shape, color, pattern, sound, smell and tangible features of the corresponding objects and transpires associated feelings in the mind. Whatever we observe or read in a day, most of it appears to have been forgotten by us the next day although, all of it remains stored in back of the brain. This is because of the lack of our concentration and the dirt of our abrupt or malign thinking that we insulate our conscious mind from the deeper layers of the brain.

We often do not pay much attention to cleanup and fine-tune this divine machinery by purifying and controlling our thoughts and emotions and protecting our brains from excitations at the level of sensory and motor activities. Sincere and disciplined practices of *swadhyāya* — aiming at the uplifting of the self and the society as an integral part of progress, offers adept guidance and support for proper conditioning of the mind. Practices of *yoga* and meditation are also used in training the brain and refining its intellectual faculties. Our careless attitude towards *swadhyāya* and meditation, irregularities in our life, ignorance about our internal world is largely responsible for waning the awaken potentials of our brain and dumping its inherent talents in a dormant state forever.

Dr. George Delgado has conducted several experiments on controlling some activities of the brain. His results indicate that by thorough analysis of the dynamics of neuronal network and control of its stimulation due to specific sensory activities, one can restrain hunger, thrust, concupiscence, etc. By intensive practices of control over the deeper functional regions of brain — pertaining to the subconscious and unconscious mind, one might attain the power of reading other's mind or sending messages through thought waves (telepathy) without any external mode of communication.

If we model the 'on' (excited) and 'off' (inactive) states of a neuron as the 0 and 1 bits of a computer memory, the basic storage in the memory of the human brain would be analogous to so many bytes that even a magnetic tape of area equal to that of the earth's surface would be insufficient to record this huge amount of information. Specific pieces of this grand stock of information are processed by the functional coding sequences of DNA and RNA. Dr. Holgar Hyden of Sweden has shown that the structural state of human brain is not rigid. Its capacity and potentials can be varied with the help of specific (bio)chemicals.

Dr. Bernard Agranoff of the Michigan University had conducted some experiments on golden fish which showed that these fishes forget that they have eaten if they are fed with a dose of *pyuronycine* after

food. The experiments on dogs resulted in loss of memory due to certain drugs; the pet dogs so treated had forgotten their houses and were unable to recognize their masters. Experiments with some medicines have shown partial effects of memory loss for a short time in the humans too. Investigations are going on to search for the techniques of switching 'off' a specific portion of the memory permanently. This might be useful in relieving the patients from the indelible memories, such as those of — shocking incidences, demise of the dear and near ones, tragedies, severe loss, events of disgrace or insult, animosity etc, which quite often become the cause of psychiatric or psychosomatic disorders.

The opposite kinds of experiments deal with increasing the memory and thereby helping many duffers and the amnesiacs. Just imagine, a dull student would read his textbook just once and go for the exams with full confidence because the specific medicine gulped by him would help him recall everything read by him on the required topics...!

Lord Macoley had an exceptionally sharp memory. He had written the history of Britain __ in eighty volumes without opening any other book for this purpose. He used to remember all the references, dates and venues of the events and the names of the people associated with those events since the day he met with, first saw, heard, or read about them. Map of any place ever visited by him, names and addresses of the people whom he had met at least once, information or knowledge of any kind ever required by him ...., were so easily recalled by him as if he had crammed them by heart a short while ago. People used to call him a 'moving library'.

Parson was a peerless scholar of Greek. He knew by heart all the books written in this language till his times and all the plays of Shakespeare. Mr. Richard Garnet, a one time assistant superintendent of the British museum had become the chairman of the publication section of another museum for about twelve years. The catalogue and locations of the books were so perfectly stored in his memory that without lifting himself from the chair, he used to tell the

exact location of the book asked for if the book was available in the stock. Moreover, he was even able to give an oral report on the contexts and level of the text inside the books.

The above mentioned historical examples give evidence in support of the immense power of the brain. It is rather unfortunate that we spent more time and efforts in searching and collecting the external world and the material substances instead of knowing our own inner self. All our activities are directly or indirectly associated with the use of matter and energy for worldly comforts. We hardly know anything about the treasure of 'invaluable pearls' locked inside our skull. Whatever be the best of knowledge, potentials and joys we gain from the external world, much more than that could be attained by much lesser efforts by using the internal resources of our brains. Some Asian universities have experimented on 'brain washing' with the help of ESB electrical stimulation of brain. So far, this technique has been partially successful when applied on the monkeys, dogs, cats, rabbits, rats, etc. It was found in such experiments that these creatures forget about the food of their liking, their senses of — fear, friendship, hostility etc and their natural tendencies change upside down due to the 'brain washing' treatments. For instance, when a rat was dropped in front of such a cat, she, instead of attacking it, got scared and hid herself in one corner. Peculiar behaviors like— attacking a fellow-being violently for a few seconds and then suddenly hugging each other with love..., can be triggered in the animals by stimulating different portions of their brain by electrical signals.

The human brain has much more complex and developed structure as compared to that of any other creature. Its resistance against external treatments also is high. However, the experiments of above kind have made a section of scientific community believe in principle that the tendencies and behavior of humans could also be controlled with the help of electrical and chemical treatments. If this becomes possible then one day a dictator or whimsical ruler would virtually convert the people of his kingdom as his slaves by forcing them to drink a chemical which would change their mind as per his will...! What will be the use of intellectual activities of reading, writing, thinking

etc, if a handful of scientists would be able to uplift the mental faculties of people by certain electrical or chemical treatment? Then the generations of warriors, scholars, farmers, artists, etc, will be 'produced' by appropriate treatment of the brains of the offsprings in the laboratory...!

Whether we are awaken or asleep, the brain continues to regulate various functions of our body with the help of its neurons and the nerves connected with the other components of the body through the spinal column. This bulk of the brain, weighing only about three pounds, needs about 20 watts of electrical power for performing the routine nonstop tasks; this energy is obtained form the stock of glucose and oxygen available in the body. According to modern scientific understanding, each thought, desire, emotion, every kind of experience or perception corresponds to specific electrical impulses and biochemical processing inside the brain. The techniques like EEG (*Electroencephalograms*) help visualize the electrical activities inside the brain.

Most of the investigations in neuroscience are at present aimed at medical treatment of the physical and mental abnormalities due to the imbalance or damage in the harmonious functioning of the brain. Deeper understanding of the brain — especially the unconscious and subtler mind might help the researchers to find the methods of improving one's mental faculties and elevating the level of thoughts and emotions.

Not only the exceptional memory, the strong willpower of some people also sets live examples of the internal strength of the human brain. Dr. Ralf Alexander had demonstrated this power publicly in Mexico City several years ago. The viewers of this show included the representatives of leading newspapers and magazines, groups of scientists, intellectuals and elite of the society along with the general public. Dr. Ralf had planned to demonstrate how the clusters of clouds could be formed in a desired shape and moved in the sky at one's will.

The show began as per schedule. The sky was clear at that time. After a short while, the demonstrator — Dr. Ralf 'brought' clouds there on public demand. With the help of his strong willpower, he could change the shapes, scattering patterns and movements of the clouds as per the demand of the viewers. The news of this exciting exhibition of the remote influence of willpower had then appeared under bold headlines in almost all newspapers of America.

Renowned scientist Allen Epragate had written a detailed article in the magazine 'Psychology' with reference to Dr. Ralf's demonstrations. He had commented that — the willpower of a human is a special kind of (electrical) energy current by which one can influence the activities of nature in the targeted space. This is a scientific method of triggering high energy aura .....; such demonstrations should not be regarded as magical shows.

The above discussed are few illustrations of the extraordinary capabilities of the human brain. In the deeper depths of this ocean of consciousness there lie more amazing potentials which are still beyond the reach of modern (material based) sciences. The science of spirituality is much advanced in this regard. It offers the methods of internal evaluation, realization and control of the brain without using any external means. It also contains the key of sublime transformation of the physical, mental and spiritual levels of all human beings.

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3. The Pendora's Box

The placement of the brain at the top of the human body matches with the superiority of its role as compared to the other organs. It sits at the head of the body as if Lord Shiva divine glory is present on the sacred *Kailash* peak of the Himalayas. The strong fort of the skull protects it from pollution, harmful radiation, effects of weather fluctuations and also prevents it from being hurt due to external stroke or hit... Further, the outer walls of this fort are also in contact with the external environment so as to allow important cosmic signals to reach the brain; this organization is most suitable for the healthy functioning of the brain as well as the body.

An infant's brain weighs only about 12 ounces. In a grownup youth it becomes about 3 pounds. Its functional capabilities increase at exponential rates as compared to the growth of its size and weight during this period. With the help of microfilms, we can store huge volumes of books in a tiny pocket. A healthy and normally developed human brain can store the amount of knowledge, which if printed, would require billions of huge volumes of books. Moreover, nature has endowed it with the potential to even double this capacity as and when required.

If one half of the brain is damaged or hurt due to some accident or similar causes, the remaining half fulfills the tasks of both... We normally have two hands, two legs, two eyes, two ears, two lungs, two kidneys etc. If one of these is lost, the normal functions of the body continue without much trouble because, the other member of the pair can compensate to a large extent for the lost or failed one. The brain does so despite being a single organ. It continues to perform its essential duties efficiently even if half portion becomes useless.

During the Second World War, about sixty-two soldiers had to undergo major surgical operations in which half portion of the brain was removed because of concussion. It was feared at that time that even if they survived, the memorizing capacity and efficiency of their brains would also be halved after such an operation.

However, such apprehensions were found to be baseless as the half-brains of these soldiers worked normally like the complete ones.

Size, weight or physique of the body might be a good measure of its physical strength to some extent. However, that is certainly not the case with respect to the potentials of the brain. The brain of an elephant weighs about 10 pounds and that of a human only 3 pounds. But, we all know that an elephant is not intelligent at all as compared to a normal human.

Intelligence is found to be associated with the connectivity of the neurons in the cortex. More the number of active connections among these neurons, the higher will be the efficacy of information transmission and retrieval through them. The principle of cooperatively assures progress in every field of life. That it is also the basis of intelligence — can be easily seen in the structure and functional adaptability of the interconnected neurons.

The human brain controls every activity of life. The domain of its regulatory tasks ranges from the body-functions to mental faculties and from the wonderful creations of imaginations to the depths of sentiments and subtler fields of emotions and acumen. Every kind of experience is stored in its memory. Only the intelligent machinery of the brain performs the functions of reasoning, planning and decision making. Whatever be the external structure, appearance and activities of the body, the basic source of control of each and every component and function of the body lies in the brain (mind). All the macro and micro level physiological, biochemical, cellular and molecular activities inside the body are conducted under its regulatory mechanism. It is the core of the origin, cultivation and culmination of the endeavors and tendencies of inclination towards philosophy, science, business, technical skills, art, music, adventure etc. What is the present level of one's personality and what it would become in near future — this can be deciphered by the elucidation of his/her mentality and emotional propriety.

The amount of material substances in brain is very less but its structural complexity, flexibility, storage capacity and functional adaptability are marvelous. Its efficiency in retrieving any piece of information from the hidden stock of its memory almost instantaneously and its Parallel processing at ultra fast speed make it a supreme computer. These together with the unbound intelligence of the human brain challenge that none of the advanced information systems, super computers or other man made artificially intelligent machines could ever match the functioning of human brain *in toto*.

Man made devices perform only the particular tasks for which they are fabricated. Their power and efficiency depends upon their design. Such is not the case with the natural 'instruments' like the human body and brain. The brain automatically controls its own development and can expand its capacities, potentials, activities and efficiency beyond any limit. It begins to grow on its own since the time of birth of the foetus and continues to perfect its development till the time of death along with performing its duties towards the other organs without any pause.... In this respect, it may be likened to a teacher, who, besides teaching regularly in the school, also continues his own studies and gradually passes higher grades of examination to expand his own scholarly talents.

Recent developments in neurosciences have revealed many features of the structure and function of the human brain. The facts known till date are so startling that this organ appears to be superior than the collective accomplishments of the most advanced technologies. What remains to be known about it could be more astonishing. Many layers of this majestic Pendora's box still remain closed. As stated earlier, in normal case a large number of neuronal connections remain inactivated throughout the life of a human being unless some extra efforts are made — for instance, by *yoga* practices and other experiments of spirituality to stimulate them. Rousing of these latent centers of consciousness can bestow supernatural faculties. Then, an ordinary human can enhance his physical power to compete with that of a giant and develop divine talents and potentials at the mental, intellectual and spiritual levels too.

Regular physical exercises and massaging etc. are practiced in order to energize the functional centers, which maintain physical health. The metabolic activities are maintained by eating pure, nutritious and digestive food in balanced quantities. Such practices ensure happy and healthy survival of the body in normal cases. However, extra care is essential for the refinement of mental capabilities and talents. The food intake of a person engaged in such an endeavor should be pure and austere and should also be 'charged' by subtle energy. The latter helps stirring and arousing the reservoir of consciousness existing in the brain.

The food of one's own refined thoughts, sentiments and inner strength catalyses the actions of the subtle energy. The external means useful in this regard consist of — dedicated endeavors (*sādhanās*) of practising truth, austerity and penance in every aspect of life; ascetic contemplation and *swādhyāya*# coupled with the *sādhanās* of spiritual elevation. Meditation (*dhyān*) is the simplest kind of *sādhanā*, which sublimates the flow of subtle energy in the brain.

Focusing of sunrays on a convex lens results in generation of thermal energy and ignition; channelizing of steam in a single direction triggers motion of a steam engine; targeted attack of cannon gives rise to an explosion.... These examples demonstrate the power of concentration. A large number of bio-electrical impulses and energetic currents continuously flow in the human brain....; focusing these to refine and strengthen specific quality of mind — is accomplished by a *dhyān sādhanā*. This also results in rousing the willpower and mental strength along with sharpening of the intellect.

The inner strength of the mind is more important than the might physical power of the body, the power of wealth and external resources or the impact of education and talents etc.... One can rise up to those heights of development which are unimaginable in today's world and gradually culminate the personality with the help of the awakened inner strength of the mind.

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Let The Right Side Brain Think Too !

In terms of anatomy and physiology, the structure and basic functions of the brain is same in all human beings. Then what is the reason that some people become scientists, some artists, writers, or otherwise talented and some do nothing; some are intelligent to the level of genius while some are dullards or booby? The intellectuals and thinkers of all ages have addressed this issue.

Ms. Betty Edwards writes in her book entitled 'Drawing on the Right Side of Brain' that — the right side hemisphere of the brain is found to be more active in the people who are endowed with creative talents. As such the left and the right parts together constitute the complete brain. However, the right side of the brain is found to be relatively more developed and active in the people having investigative mind with sound reasoning and insight.

It is really beyond the capacity of human skill to comprehend the amazing features of the brain or decipher why the eternal creator had given special roles to the two halves of a single organ. The brain-material, which looks like a jelly, brown substance—made up of thousand billions neurons, is the main power generator in the 'factory' of body. It is million times better than the super computers of the most advanced generation. Its central processing unit (CPU) receives, recognizes and processes several bio-electrical signals simultaneously in a matter of just few micro seconds. Bio-electrical signals are processed continuously in an active brain at a high speed of over thousands per second. They constitute the basis for the recognition and processing as per the informational impulses received from the sense organs.... The brain automatically produces the energy required for its own processing and continues to work efficiently without any rest throughout the normal life of a human being.

The right hemisphere of the brain has been of special interest to the neuroscientists and psychologists of the modern age. Dr. Stanley Angelebert has written a thought-provoking article on this topic in the July 1988 issue of Reader's Digest. In this article entitled 'Are

You Thinking Right?', he has described significant aspects of the unique role of the right side of the human brain. He states — "Most of us do not realize the immense potential inherent in our own self; we are not able to drive our intellect righteously. This is the reason why we are deprived of those qualities which most of the talented great personalities possess as natural endowments. Although it is not necessary for people in general to know the detailed structure of the brain or analyze the positions and processing of special functional centers in it. It would however, be beneficial for all the people to be aware of — how to make the best use of this precious organ to refine and rouse the mental and intellectual talents."

The learned writer further describes that — it is well known that the right hemisphere of the brain controls the motor and sensory activities of the left half of the body and the left hemisphere does that for the right portion of the body. The right side part of the brain is considered to be the functional center for artistic talents, soft emotions and creativity and its left counterpart is thought to govern talents, skillful activities and extraordinary memory..... However, it is not found to be so in our daily activities.

When we try to recollect where a particular object was kept, recall a person whom we had met earlier, or perform similar tasks of retrieving the memory, we make more use of the right brain as compared to the left. In the awaken state of the body — that is, for about 16 hours of a day on an average, when the conscious mind is active, the 'shift to right' process is carried out by the *corpus calosom*. This process requires about 50 watts per hour in a normal person's thinking.

Noble laureate, Dr. Roger Sperry and his associates at the California Institute of Technology had analyzed the activities of epileptic patients before and after the brain- surgery. It was found that the coordination or separation of the dual activities (of the two halves) of the brain change pattern of the electrical sparks (impulses) in it. A *split brain syndrome* was developed in the patients when the center connecting the left and the right halves of the brain was cut during the

surgical operations. Characteristics of dual personality were then observed in the subjects/ patients. Moreover, because of lack of mutual cooperation and systematic organization and fine-tuning of the intellectual functions of the two hemispheres of the brain, such people were unable to make use of the specific talents they possessed. Similar kinds of observations made in several neurological research laboratories have led to drastic change in the classical views, about the role of the two halves of the human brain. Better understanding of the brain-functions has raised hopes for creative use of neurosurgical operations.

People in the Indian society, by and large, force their lefty children to use the right hand instead of the left for most of the essential tasks including eating, writing etc. This conviction also exists in the western society. The conventional views about 'righteousness of the right hand' are rather misleading. In fact, the right side brain of a person who naturally uses the left hand for every activity — be that holding a pen while writing or griping a cricket bat or tennis racket while playing, etc, is more active than that in those who normally use the right hand....

Forcing a 'lefty' child to use the right hand triggers the harmful processing of 'shift to the left' in his brain. This disturbs the harmony between the two parts of his brain and suppresses proper mental development of the child. As a result, such children often suffer from indecisiveness, mental complexes and psychological abnormalities; development of dual personality is a common phenomenon in such cases. According to Dr. Judie Helms of Connecticut, the right brain's major role is converted into a minor one because of a forced transformation of the lefty persons into 'normal' by social convention ones. This should be avoided by generating social awareness about the importance of using the right brain.

Professor Albert Einstein, renowned genius of the 20th century science, used to say that — it is very much in our hand to train and elevate the creative potentials of our brain. In his views, we should try to create, by mental concentration, a three-dimensional image

and/or detailed planning of what we intend to do.... This ability is naturally gifted to every human being and the right brain performs the tasks of planning and decision making.... If, before starting an important task, we plan and thoroughly study the 'pros and cons', 'ifs and buts' associated with it and register the 'image' of the related thoughts in the right side brain then the task would certainly be completed as per our expectations". He used to mention that he had developed, refined and made best use of his brain by such experiments on creative use of the two halves of the brain.

In his book 'The Act of Creation', Arthur Koestler states that — the thoughts, which are torturing or disturbing the mind or which are mutually conflicting and perplexing and destabilizing internal peace, should be expelled from the mind for a few second. After a while, thinking should be focused at the right side of the brain. The tumultuous thoughts would be systematically 'processed' there and appear in the mind in a clearer and harmonized form... Calm thinking and thorough analysis of the related topic or problem would be easily possible in this state of mind. Such a conditioning of the mind could be practised any time — while relaxing, scrolling, or, meditating....

Many psychologists and psychiatrists also opine that people can be trained to use their right side brains and thus develop the faculties of balanced thinking and sound reasoning. The oriental philosophy and ancient science of human mind also emphasize that a human being is a controller of his own development. He can rouse the dormant talents and make best use of his mental faculties by realizing the potentials of his right side brain. Negligence of this half of the brain or improper use of its creativity is one of the major causes of the insignificant development of one's personality. We must therefore learn to activate this core of creative talents and intelligence and harmonize it with the left side brain with the help of simple spiritual practices like *dhyān* (meditation).

When one mentally concentrates on specific objects and links it with contemplation of divine ideals during deep meditation, his consciousness gets linked with the subtle world. Gradually, his 'inner eyes' –

– the centers of latent intellect — are awakened... If one sincerely performs such experiments at a regular pace in daily life, there is no reason why one would not be able to refine his intellect and activate some portion of the unused 93% of the real potential of his brain...! It should always be beard in mind that righteous thinking and integrity of character are the key factors in supporting the elevation of intellect by any practice of conditioning and harmonizing the activities of brain.

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The Energy of Brain In The Hollow Of The Body

Words would always be less in expressing the importance of health in human life. 'Healthy mind lies in a healthy body' — is an enthusing statement reflecting the importance of health of physical body. However, this does not represent the ultimate truth. Mind cannot manifest its faculties so easily without the tool of the body. But, it can very well maintain its unique potentials even in a weak, injured or handicapped body. That the mental powers could be awaken and made more sharp and creative even in an unhealthy body — has been demonstrated by plenty of live examples in human history.

The Lives of the *rishis* like Chyavan and Valmiki are examples of the above kind available in the ancient history of India. The bodies of these *rishis* had become almost like skeletons because of practicing strict penance. Their souls however existed in spiritually sublimated states with full expression of life even in those 'hollow' bodies. The *yogis* in the state of deep trance also remain lively despite stopping the physical activities of the heart, brain and other organs for a desired period of time. After completion of the trance they bring back the body to a normal state.

The above examples pertain to spiritual experiments only. However, similar amazing phenomena are seen in the ordinary worldly lives too. Mr. Hanava Hokaishi of Japan was renowned in the 18th century as an incarnation of the deity of knowledge. He was born in 1712 and had lost his eyesight at the early age of seven years. Despite being blind, he continued to acquire knowledge by listening. This way he had 'read' over 40 thousands books in his 101 years long life. So amazing was the grasping power of his brain that many of the books were thoroughly stored in his memory by way of listening to their texts just once. The depth and grandeur of his knowledge was a matter of surprise for the scholars of that time. Many a times, he used to quote such references of knowledge that were beyond the level of imagination of the savants who were discussing with him. On the request of his friends, he had also written a treatise which

was compiled in 2820 volumes and which still exists as a monument of the unlimited potentials of the human intellect.

Dr. Stephen Hawking's life is a shining example of this kind in the present times. This great mathematician physicist cum astrophysicist, despite being totally handicapped physically, has made remarkable contributions in unraveling the secrets of the cosmos. This distinguished professor at the Cambridge University, UK has derived certain scientific principles, which have given rise to striking changes and rethinking on the exiting theories of the origin and expansion of the universe and the existence of black holes.

This eminent scientist, now in his fifties, was diagnosed as suffering from ALS – a motor neuron disease about three decades ago, when he was a doctoral student. However, charmed by his intellect and moved by the aim of supporting him with love and care, a young British girl married him at that time. The couple was also blessed of three children. Dr. Hawking's body had gradually paralyzed due to the deadly disease in the later years. His health continued to worsen gradually and he eventually lost his voice. His hands also paralyzed like his legs and further disabled his body. In spite of this tragedy, his mind remains engaged in rigorous research. Advanced technological instruments — including auto controlled wheel chair, computer aided voice synthesizer and brain signal decoder, had made it possible for others to comprehend his 'lectures' and discuss and collaborate with him.

Dr. Hawking's book "A Brief History of Time" has been a best seller and is recognized as the most lucid writing on the most difficult scientific topic.... He is regarded as second Einstein of this century. The contributions of the supernatural mental functioning of his physically diseased brain in a disabled body make us rethink on the universality of the statement of 'healthy mind in a healthy body'. His life is the most convincing evidence of the fact that the potentials of human-brain blossom beyond the barriers of physical fitness. They can be elevated and used in full capacity by a human being so long as his soul exists in the body, howsoever weak or hollow the latter may be

Dr. Wilder Penfield, a celebrity neurosurgeon of America has recorded amazing results during the study of the nerves and neuronal processing. Once, when he electrically charged a portion of the brain of an eight year old girl undergoing a neurological treatment, she began to describe an incident without a pause....; it appeared as if a gramophone record player is switched-on inside her mouth. She narrated—I was playing with my brother. They were hiding in a farm to frighten and irritate me..... I lost track of them. Then I saw a man whose clothes were clumsy. He took out a snake from his bag and showed it to me. I ran away with fear and reached home in a gasping state."

Dr. Penfield was surprised at this flow of her thoughts/imagination and to note that such a young child was describing an incident in so much detail. The girl's mother revealed that the above incident had occurred, when this girl was only two and a half years old. As the doctor was sure that no child at that small age could ever remember a past incident..., he conjectured that there must be a system in human brain which is 'matured', 'killed' and 'thoughtful' since the time of birth. Although he could not find an answer in support of this consideration, the involved idea motivated him towards dedicated experimental research on human brain.

As the research in the faculties of neuroscience has advanced, the human brain is being found to be more and more mysterious.... Deeper elucidation are coming closer to proving the existence of the *sahastra kamal* or *sahastrāra*[2] in the core of the human brain as described in the ancient Indian philosophy and science of spirituality. According to the scriptures, the subtle flow of supreme consciousness in this *cakra* connects the human consciousness with the cosmic currents of divine power. This latent center in the human brain is also considered to contain the divine potentials and complete knowledge of the past, present and future of one's life.

The Indian *rishis* had realized the existence of the *sahastra kamal* along with the *ṣaṭ cakras*[3] and the *brahnrāndhra*[4] in the human brain. The *sahstrāra* is described to be superior to all the other extrasensory centers (*cakras*) of the subtle energy of *prāṇa*. It is described to exist in the reticular activating system in the brain. The physical activity center (transducer) of this *cakra* is described to be subtly located in the hollow portion about two inches away from the temples and about two to three inch deep behind the *bhrūmadhya* (mid point between the eyebrows). Upon successful completion of the associated *sādhanās*, it is realized as a unique glow of light. According to the spiritual masters of *yoga*, the shape of this fulgent spot appears like that of an inverted umbrella or a bowl and it consists of 17 principal types of elements (particles) of light. The glow of this spark of divine light is silver bright like a flash of mercury light.

The Chandogya Upnishad describes the state of realization of the *sahastrāra* — '*Tasya Sarveṣu Lokeṣu Kāsmacāroṁ Bhavati*' Meaning: the *yogi* who has seen the *sahastrāra* can attain the knowledge of all the sciences. The *sahastrāra* is also the center of the regulatory power of the brain from where the latter controls the activities of the body. It is the source that inspires and governs human intellect, which is at the root of the enormous creations and accomplishments of the humans in this world.

If we sharpen the knowledge-acquiring unit of the brain up to the brightest level then we can recall, at will, whatever we had ever heard, seen, read, thought or experienced. Moreover, we can also see or know everything that is read, heard, thought, seen or experienced by others around us, so clearly as if a reel of a film is being projected in front of our eyes. The memory registers of the brain store the visual perceptions like those on a reel at a speed of about one seen per second. More surprisingly, this majestic box inside the skull also contains 'preprints' of the scenes, which a person is going to see in future. This astonishing capability of the human brain, if used completely, can enable one to become omniscient. Each one of us can attempt to realize and rouse the powers of brain and benefit accordingly.

Many of the supernatural potentials of the human brain described in the *yoga*-scriptures are now found to be matching with the accidentally recorded or experimentally elucidated results in the modern scientific laboratories. The above-described experiment of Dr. Penfield is an elementary illustration of such findings. In case of this particular example, one might argue that, the peculiar incident must have created such an impact on the child's mind that it got assimilated in her memory with a high intensity and thus became 'ever memorable' to her. However, there are many other examples — including those of awaken memories of the previous births, which demonstrate the existence of the layers of latent memory with immense storage capacity in human brain which contain the memories of the previous lives and the inherent tendencies of one's mind. Some authentic incidents of this kind are cited below.

A somewhat similar effect — as the one described earlier, was observed in case of an American boy. When external electrical current was flown through a nerve the boy began humming a song in a language, which was foreign to him. The tune of the song and the perfection of the boy's singing made it quite soothing.... The song was instantaneously recorded in the lab. Later on, linguists recognized the language of this song as a dialect, which was spoken in some parts of West Germany long time ago. Surprisingly, nobody in the boy's family — neither maternal nor paternal relatives had ever had any connection with that region of Germany. None among his acquaintance or friends had ever heard that language. After a detailed study of the event, it was concluded that the boy must have heard or learnt that song in a previous life whose memories were assimilated in his brain's otherwise dormant portion which got activated due to the electrical charge.

In a neurosurgical operation, Dr. Penfield had observed that a particular nerve of a patient used to be stimulated during the epileptic attack. The doctor had carefully cut and separated that nerve....; the patient got rid of epilepsy and enjoyed a normal healthy life after this operation. Commenting on this case, the doctor stated that — "There are many thousands millions of protein molecules present in

the brain matter; about two thousands millions of these have an average age of 70 years approximately. During the lifetime (active state) of these proteins, whatever a person perceives or experiences in the conscious state of the mind gets stored in neuronal registers of the brain. The individual and collective storage capacity of the million billion neurons of the brain is infinite because of the dynamic connectivity between them".

If there were sensitive instruments to measure and project the millisecond to millisecond activities of this majestic network then it would have become possible for the scientists to unravel the complete history of one's present and previous lives. It would then have been possible to see in what kinds of *yonis* (forms of life) an individual soul had appeared and what were its sinful (*pāpa*) actions and what were its morally ecstatic, serene altruist deeds (*puṇya*) in the past or the present life. The *sahastrāra* is like a 'crystal' through which one can get a glimpse of the journey of the soul and retrieve detailed knowledge about the past and the present life. This is the reason why the scriptures of Hindu religion call the *sahastrāra* as *sūtrātmā* — the eternal linkage of the soul.

History has witnessed rare incidents of supernatural memory, depth of knowledge and exceptional talents of humans since the time of yore. Many of these live examples also highlight the eternal connection of the soul with the conscious, unconscious and super-conscious faculties of the mind. Observance of extraordinary potentials of far-sightedness, clairvoyance, telepathy and other kinds of supernatural perceptions also gives evidential support to this aspect. Many such cases observed in the past few centuries have been recorded and compiled with authentic reports in some western countries. In his book 'New Frontiers of Mind', Mr. J.B. Rine has sighted many examples of clairvoyance which were analyzed and tested by the neuroscientists and psychologists. Over fifty percent of the partly reported cases were proved to be true. Hundred percent of the cases pertaining to supernatural 'vision' during dreams or in a trance-like state of the mind were found to be true. One such case reported by Mr. Rine is described below:

Mr. Rine's neighbor's wife had once dreamt that her brother, who lived in a distant village is going to his granary in a horse cart. There he opened his cart and all of a sudden climbed up the scaffold and committed suicide by shooting himself by a revolver... He had then fallen on a heap of chaff nearby. The lady was so frightened by this dream that she got up and asked her husband to immediately start for her brother's village. Her husband went to Mr. Rine's father to borrow his horse cart. The couple reached the village next day early morning. The lady was shocked to find her brother's dead body lying in his granary in exactly the same position as she had seen in the dream.

Another incident of similar kind was published in the above book. This was reported to Mr. Rine by one of his friends, who, was a Professor. This had happened when the Professor's wife was playing a game of bridge in a friend's house. She suddenly felt as if her daughter, whom she had left at home, is in some serious trouble. She wanted to inquire about her little daughter over telephone but had to continue playing cards on her friend's request... But, after a while, she felt so uneasy and mentally disturbed that she left the game and rushed to the phone. A maidservant received the phone... When the lady asked about her daughter's well being the servant paused for a while and replied 'she is all right'. As her friend insisted to complete the game, she then played for some more time and reached home in the evening. There she learnt that her daughter had had a narrow escape from serious injuries in a car accident.

When the girl (daughter) was going in a car with her father Professor, she was on the back seat peeping through open window....; she lost her balance and was kicked out due to a sudden jerk.... Somehow she got hold of the window glass and was almost hanging outside the speedy car. She was so scared that she could not even scream....! Before her father could realize the mishappening, the traffic police noticed her and stopped the car within a few minutes. Had there been slight delay, the girl would have slipped down and got crushed in the running traffic. The tragic movements of this accident were exactly those when her mother felt uneasy and panicked about

her... The daughter had reached home safely by the time her mother had phoned there. As the child was all right, the maidservant did not tell anything over phone about the incident.

The above mentioned Professor has also reported in Rine's book about his receiving subtle signals from the cosmos when he was a graduate student living a top the hills of Pennsylvania. Such experiences cited in the book reflect the potentials of the subconscious and the unconscious mind.

In the state of dream all the activities of our body are internalized under the control of the ever-active unconscious mind. The truth of the events seen in a dream or experienced subconsciously signify the linkage of brain (mind) with the eternal consciousness of the soul which is inspired by the Omnipresent supreme consciousness and is beyond the reach of any sentience. The supernatural experiences associated with different faculties of mind indicate the existence of a supreme source which is absolute and which can never be bound within the limits of time and space. Einstein had accepted the existence of the absolute power of consciousness. He had even attempted proving its eternity through his theory of relativity.

Modern science has not yet been able to elucidate and analyze the activities of the unconscious mind in human brain. As the research in this direction advances in collaboration with that in the fields of subtle sciences, the role of *sahastrāra* would become clear and recognized as the source of the eternal expression of the soul.

Scientific experiments on rats and monkeys have helped understanding the neurophysiology of their motor control. In human beings, the complexities are so high even at the level of simple physiological activities that much of these autoregulatory mechanisms of the brain still remain the topics of research. Its automatic control of the sensory perception is more complicated. The brain experiences (as pain) the injuries of a leg or any other organ. The eyes weep but the sorrow is felt by the brain (mind). The body moves but it is the brain which worries about the hindrances along the path. The hands use

tools but it is the brain which enables them to do so.... Whatever one thinks, does, believes and feels is because of the brain (mind). In essence, the existence of an individual is there because of his brain.

The approach of the Indian *rishis* — the perfect scientists of ancient times, had been comprehensive in understanding and using the majestic potentials of human brain. They had focused their research on its subtle faculties — the *mana* (mind), *buddhi* (intellect), *citta* (the inherent memory and source of mental tendencies) and *ahaṁkār* (the sense of being — the manifestation of the existence of the soul). They were able to study all the spiritual and mental aspects of the brain by realizing the existence, functions and eternal linkage of its subtle entities with the soul. Acquisition of the knowledge of its activities at the physical, physiological, neurological, and biochemical levels was an offshoot of their realizations of its subtle activities. They were able to attain supernatural talents and make use of the body beyond the barriers of time and space. These accomplishments remain unparalleled in human history.

By conducting dedicated experiments of the subtle science of spirituality, the *rishis* had unraveled the existence and principal role of the *sahastrāra* in the human brain along with that of the *ṣaṭ cakras* and the *brahnrāndhras* as its associates. The different *sādhanās* of spiritual experiments and *yoga* were so devised by them that every human could realize and be bestowed by the immense power of his/her brain by practising these *sādhanās*. It is unfortunate to note that the people of the later ages could not pursue the disciplined and ascetic life essential for the *sādhanās*, and instead preferred materialistic gains and luxuries. Even the simple practices of *japa* (renunciation) of *mantras* and *dhyān* (meditation) could not find place in the daily lives of majority of such people. This had led to a severe discontinuity that gave rise to the near total disappearance, in the present era, of the most advanced branch of complete knowledge established by our glorious ancestors.

The important role of the pituitary gland is now well known to the neuroscientists. Anatomically, this gland exists inside the brain at the

junction where the optical nerves meet to form the optical chasm. Secretion of a variety of hormones — be those required for controlling the body functions or those giving rise to the expression of the feelings of anger, fear, anxiety, depression or cheerfulness, enthusiasm etc, pertaining to one's mental and emotional state originates from this center. The perceptions of smell, taste or any other experience of the sense organs is also regulated from here. Because of this predominant role, the pituitary is also called the master gland. This corresponds to the *āgyā cakra* described in the Indian scriptures on *yoga*.

Scientists have found two valve like structures (called functional valve) near the pituitary location; one facing the right and the other towards the left side of the brain. Though they have not been able to elucidate the subtle structure of this 'masterpiece' (pituitary gland) of the brain, the neuroscientists are optimistic that its detailed knowledge would enable deciphering the mysteries of the internal world of the human brain and rest of the body. Modern scientific investigations have analyzed about 17% of the structural expansion of the brain. More amazing functions and mysteries are hidden inside the remaining 83 %. The optical functional area and the sensory areas are located in between the superior and inferior cerebral pedicles (plexuses).

All kinds of nuclei present in the brain receive stimulation from the above center. A subtle 'wonder land' is present here, which is beyond the grasp of physical instruments. However, one can experience it and unravel its mysteries by controlling the mental agility, restraining the extrovert tendencies of the mind, practicing mental concentration and meditation and adopting the principles of spirituality in all aspects of life.

One can enjoy a blissful life by maintaining the health, happiness and peace of his mind. Measures based on psychological, physiological and other scientific aspects could be useful in this regard provided they are focused at the subtle powers of the brain. The mind, being a subtle power of the brain, is an expression of the soul; it is the source of existence of the individuals; whatever be the potential of a

person, its seed resides in his brain. The development of the personality of an individual depends upon the level of his conscious mind and the quality of other subtle (subconscious and unconscious) functions of his brain. We cannot know ourselves, nor even our body, without knowing our brain (mind) up to the deepest depth.

It is said that the soul resides in the hidden layers of consciousness in the brain. Knowledge of the journey of the soul, knowledge of the cosmos and that of the Omniscient supreme divine power is also described to exist in the inner core of the brain. The Indian philosophy is mainly centered on the in-depth knowledge and realization of the *mana*, *buddhi*, *citta* and *ahaṁkār* — the subtle layers of the human brain. The *rishis*, the visionaries of this eternal knowledge had discovered the principles and methods of acquiring absolute knowledge and attainment of ultimate bliss by the realization of the subtle streams of *prāṇa rishi* states in the Dhyanbindu Upnishad (shloka nos. 103-106) that —
Kapāla Kuhare Madhye Caturdwārasya Madhyame |
Tadātmā Rājate Tatra Yathāvyomni Divākarḥ ||
Kodaṇḍadwaya Madhyatu Brahmrandhreṣu Śakti Ca |
Swātmānaṁ Puruṣaṁ Paśyenmanastatra Layaṁ Gataṁ ||
Ratnāni Jyotisnanādaṁ Tu Bindumāheśvaraṁ Padaṁ |
Ya Evaṁ Veda Purūṣaḥ Sakaivalyaṁ Samaśnute ||
Meaning: In the inner core of the forehead lies the center of the four doors of the sensors of eyes, ears, nose and mouth. There one hears the eternal music — resembling the sound of a divine peacock — entering in the *brahmarāndhra* from the cosmos. Like the sun in the sky, the soul is gloriously placed at the top of the inner brain. Below the *brahmarāndhra*, deep in the *bhrūmadhya*, there exists the reflection of its power. One should realize the existence of the Self in this inner core of the brain. The eternal glow and sound of the Omniscient, Omnipotent, Supreme God exists there in a subtle form. One who knows this can attain the divine state of ultimate peace and knowledge.

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7 Human Brain — Source of Miraculous Power

If one measures the height of his body by his own hand, it would approximate only about 86 'fingers breadth' in general. The organization and function of this ordinary specimen is so splendid that no sophisticated machine could match the ordered assembly and efficiency of its components. Its automatic activities in normal case are so perfect that they appear to have been derived by mathematical principles. Its regulator—the brain appears like an astonishing creation of the Almighty. At a gross level, the major functions of the brain deal with — knowledge acquisition and biological and physiological information processing; activation and control of body functions; harmonious organization of the activity in the body as per the state of the mind.

If we consider the subtle potentials of the brain, we will find that its above mentioned 'routine' functions could be expanded to unexpected extent. So much so that — one would be able to get absolute knowledge about every thing existing in nature, placed anywhere in the cosmos; one would be able to communicate with any desired person at any place, howsoever far, without the help of any external device. If the hidden potentials of brain are aroused completely, one would be able to lift with ease anything, of whatever weight, from anywhere in the world; one would be able to control the minds of others — induce them to be an unconscious state; or, even kill someone at a remote place; may even regulate the functioning of everything existing in the world....

The supernatural potentials and talents — termed as *aṣṭa siddhi* and *nava nidhi* in the Indian scriptures — are the expressions of the miraculous powers of brain which were attained by our ancient *yogis* through mental concentration and meditation with sublime spirituality.

Divine incarnations have the supernatural faculties awaken since birth. Religious scriptures cite many examples of this sort. Several incidents of this kind are associated with the life of Jesus Christ. Once

he was travelling bare foot with a handful of his disciples....; when they felt exhausted after a day's sojourn, Jesus told one of the disciples to go up to a particular distance in a particular direction and bring back the ass who was grazing there...... Surprisingly, the fellow did find an ass at the same spot as guided by Jesus; he brought the animal for riding. That place which was far beyond the sight of others was so clearly visible to the Christ! This was nothing but a minor glimpse of his supernatural vision.

Extraordinary faculties of perception exist in subtle form in the brain of every human being, which need to be awakened by dedicated efforts. The advancement of scientific understanding of some functions of the brain and simultaneous study of the effects of some *yoga* and *dhyāna sādhanā* on these functions had paved the way for newer research. It has also shown that — the spiritual methods developed by the ancient savants are systematic and scientifically justified techniques which could activate the latent potentials of the brain.

Dr. George Delgado had conducted several experiments to demonstrate that the sensual feelings like hunger, thrust, concupiscence, etc could be controlled by controlling the governing centers of the brain. Controlling his neuronal activities could also help control the mental tendencies of a living being. In an evidential demonstration, he gave a banana to a monkey named Ali. When Ali was eating this fruit of its liking, Dr. Delgado recorded its EEG and accordingly sent specific electrical signals to this subject's brain; these signals were tuned to 'order' the monkey to throw off the thing in hand.... The viewers were surprised to watch that suddenly Ali stopped eating and threw away the banana despite his hunger and liking.

In another demonstration — a bit adventurous and risky to perform, two bulls were brought in a ground surrounded by thousands of viewers which included some experts who had come to examine Dr. Delgado's experiment. The bulls had electrodes fit in their heads; the public triggered them to have head-on collision. The fighting animals appeared so dreadful as if they would crush each other.... Just then Dr. Delgado sent a signal 'conveying' the 'message' that peace is

better than fight to both the animals. These signals had electrified the nerves of the bulls so as to stimulate the secretion of certain hormone and suppress that of the other. Within no time the bulls were seen standing calmly near each other like domestic goats ....; although their hissing continued but there was no excitation in them.... Dr. Delgado had also successfully used the method of controlling the specific nerve-functions — through electrical charge for the treatment of many patients.

At least 20 Watts of electricity flows continuously in the brain of a normal human being throughout his life. This generation and conduction of (bio) electricity is a part of the normal automatic functioning of the brain. If a neuron could be excited by some processing then because of its electrical energy, it would work like a dynamo; the million billions neuron would collectively be equivalent to million billions of dynamos..! Just imagine then.., what a gigantic amount of power — heat, light, electricity etc, that could be generated from the brain?

Understanding of the electrical activities of the neural network and related findings of modern sciences appear superficial when compared with the descriptions of the internal power of the brain as cited in the ancient scriptures. The divine powers of Lord *Indra* and *Savitā* are said to be present in the inner core of the *sahastrāra* in human brain; the Gods *Rudra* and *Puṣān* are said to exist subtly on its back side. These divine powers were identified by the *rishis* as the sources of the conscious and unconscious faculties of mind.

Scientific findings have so far discovered that the cerebrum is the principal portion of the brain where all the nerves and veins meet collectively. This portion keeps control over the sensory and motor functions of the body. The backside of the brain is so far been analyzed as the center of memory; the electrical impulses for the subconscious and unconscious activities of the brain are considered as emanated from this portion.

The activities of the conscious mind and the cerebrum reflect the existence of life in a human body. The development of body in the

foetus begins from the growth of the cerebrum; the latter controls the development and organization of other organs... In spite of clinical death, a person remains alive till there is presence of consciousness in this part of his brain. Many examples of this 'miraculous' phenomenon have been recorded in the history of modern medicine. Some of these are described below for ready reference.

A Britisher named Frank Lasslie had 'died' of heart failure in Calcutta sometime in 1896. Many members of his family had also died of similar attacks so, his death was confirmed without further investigations. His coffin was buried in a nearby graveyard. His relatives wanted to bury him in the grounds of Saint John Chapel. But, they could get the permission only after six months. Then, as per the rituals, his coffin was opened..., people were stunned to see his dead body! His body was originally kept straight with his hands folded to form a cross on the chest... but, now the body was lying overturned having its back upwards; his clothes were torn and there were spots of blood in and around his mouth.....!

The coffin was checked properly before his first burial and was closed firmly so that no insects could enter it. What happened then? The forensic experts and doctors inferred that Frank might have been buried when there was still some life in his brain — that was unconscious for some time after his heart-fail. By the time his brain would have regained consciousness he would have found himself buried inside the grave. He would not have been able even to breathe inside that airtight caffeine....; in a shocked state of fear and irritation, he might have tried to come out of that box...; in this attempt his clothes would have got torn and in the end he would have died of suffocation after vomiting blood.....

Another incident of similar kind had occurred in a Ladies hostel in Edinberra. A resident orphan girl had fallen sick there. Despite medical treatments, one day her condition became critical and all observable symptoms of life disappeared; her pulsation and breathing also stopped... After a preliminary checkup the doctor-on-duty declared that she is dead. However, the warden of the hostel was not con-

vinced. She said, I can not believe that she has died...; I will allow here cremation if her body begins to stink. Surprisingly, the girl was lying in that state for about ten days.....; still there was no sign of degradation of her body. Even the doctors were amazed to see this peculiar body. Mõre startling was the fact that the girl gained consciousness after thirteen days and became healthy few days later.

The revered saintly expert of Indian classical music Swami Haridas had once gone into trance to demonstrate on the request of the Sikh King Ranjita Singh, the power of Indian *yoga* to a British General named Sir Ventura. In two such experiments, the Swami was buried in a muddy pit — once for ten days and another time for forty days. In both the experiments, he was found perfectly healthy when he came out. However, the central top portion where the Hindus grow the hair knot — *śikhā* of his head had become hot like fire..... The portion of brain beneath this spot of head is very important in *yoga sādhanā*. This is called *rodasi* of the *saptadhāra soma*.

Literally speaking, *rodasi* means — having two parts. The two parts of central brain — the reservoir of subtle energy of consciousness are described in the *yoga* scriptures as the centers of existence of the divine powers of *Indra* and *Savitā*. The middle portion of the brain below this center is called *antarikśa* and the lower one *pṛ athvī*. Seven principal streams (*saptadhāra*) of the power of *soma* — the eternal nectar of life and energy are described as *agni*, *swargdwāra*, *atri*, *droṇakalaśa*, *aśvini*, etc. These are supposed to exist latently in the middle portion of the brain.

Peraselsas has also mentioned about the above described seven powers and classified them into two groups — Apollo and David. He has considered these 'seven currents' to be associated with the spiritual functions and the subtle emotional reflections of the human brain (mind). In anatomical terms, the associated seven activity centers of the brain correspond to the seven ventricles. The first two of these are in the right and the fourth is located in the left side of brain; the third one below the top center is connected with the pituitary} and pineal} glands. The fifth ventricle, below the third, is

attached to the cerebellum. The sixth one begins from the lower end of the brain and expands within the spinal column till the Sacrocoxial Ganglian — the lower end of the spinal cord. The seventh ventricle is spread like a cloud in the right portion of the skull.

Varuṇa (water God) is described in the scriptures as Omnipresent in each of the three *lokas* —
Yasya Śṛvetā Vicakśṇā Vistro Bhūmīradhikśitaḥ,
Thirūttarāṇi Papratuḥ Varūṇasya Dhruvaṁ Sadaḥ ||
Sa Saptānābhirajyati ||
Meaning: The mysterious streams of power, endowed with the subliminal presence of God *Varuṇa*, are spread in the three *lokas*. All these are bound with the brain particles (neurons) in the upward direction. This portion is the main center of existence of Lord *Varuṇa*. The seven groups of linkages *nerves* emanated from this center regulate the entire body and mental functions

Interestingly, the findings of modern research have a simile in the above description. The neuroscientists have found the cerebra-spinal fluid to be spread everywhere in the nervous system; 99% of this fluid consists of water only.

The comparison of the available scientific results with spiritual deliberations, although in a preliminary state and far from being complete, certainly opens up newer ways for collaboration between the two approaches to the search of knowledge. This would inspire the modern scientists to look into the philosophy and science of spirituality to attempt interpretation, analysis and implementation of the theories and methods cited in the ancient scriptures. There is wide scope for modern science to research in this area.

Different kinds of the subtle power of the omnipresent consciousness are described as the manifestations of *devtās* (powers of God) in the Indian philosophy. For instance, the seven ventricles are described as seven Gods (*sapta devatā somā*) in the scriptures of *yoga* and spirituality. These scriptures contain treasures of knowledge of the majestic structure and function of the human brain. The

methods and guidance presented there are useful for all human beings. One, who learns and gains expertise in practising the associated it *yogas* and spiritual *sādhanās*, can attain the supernatural powers some of the kind described in the beginning of this section.

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Arousing The Hidden Potentials of Brain

In terms of physico-chemical sciences, the brain is an organ made up of some proteins and other chemicals. Neurological research has shown that the gray matter in the outer brain contains about thousand billion cells — called neurons. The cerebellum consists of about twelve thousand billions nerves and the spinal column contains about 1.5 billion of extra nerves which collectively constitute the nervous system. There are about a hundred billion small cells called Gila that are connected with the *neuroglia*. A large variety of hormones and other proteins and neurotransmitters are produced or released in the brain. However, these bio chemicals cannot give rise to biological consciousness by themselves. In fact, it is the presence of consciousness which makes possible the generation and reaction of these materials and which performs the majestic functions in the brain with the help of these substances.

If brain is only a body of flash and bones made up of some specific chemicals then the animals, which have brains bigger in size than the human brain, would have had larger varieties and quantities of neurochemicals in their brains. Moreover, in that case the functions and potentials of the brain would also have been varying in proportion of its size and weight. As an organ, the brain of an elephant or a whale is much bigger in size, weight and physical strength then the human brain. However, it is well known that the mental faculties and potentials of these animals exist nowhere when compared with those of the humans. Scientific investigations reveal that the organization and subtle structure of the brains of these animals is in a primitive state as compared to the fine development of the human brain.

Dr. Wilderpen, a specialist in neurosurgery has found that the temporal cortex — dark strips surrounding the internal portion of human brain contain age-old memories in a dormant state. The area of these strips is about 25 square inches. Right behind the temples lies the temporal cortex, which generates and regulates the memory functions. Enormous varieties of events and visual movements take place

in front of our eyes every day. We notice only some of these. Out of those noticed attentively, only a few are remembered or retained in the memory. In general, even what we remembered about an event on the day it occurred, that becomes hazy in our active memory after several days. We remember the associated matters only vaguely. However, according to the experts like Dr. Wilderpen, whether we were attentive or not, whether we remember something clearly or partly with a waned memory, whether we recall it for a long time or forget it in few seconds....., every thing, whatever happened in front of our eyes or whatever has been perceived by other sense organs gets registered in our temporal cortex. Dr. Wilderpen had successfully awaken the memory—concerning unimportant and unthinkable events — of many people by inducing electrical impulses into these sensitive compartments of the brain.

The temporal cortex plays major roles in the brains of the people who possess exceptionally sharp memory. The functions of the stripes like structures in this region are remarkable in this regard. The memory of some people is so extraordinary that it makes records in history. For instance, Revi Eliza of Lithuyania had crammed over 2000 books by heart. His astonishing memory was tested many times by different means and it was always found to be perfect. A French leader, Lion Gambetta was fond of Victor Hugo's poesy. He remembered the context of thousands of pages of Hugo's writings and used to cite them with detailed reference as and when required; he could even cite the page numbers correctly.

It is said about the ancient Indian scriptures that their texts were orally recited and were not written in any script for thousands of years. The four Vedas, Brahmans, Aranyaks, Nirukta, Nighantu and Upnishads etc, were all taught and learnt verbally under the *Gurū-śiṣya* system of the ancient schools. The *śiṣya* (disciple) used to learn and remember whatever was recited and verbally taught by his *Gurū* (master). Because of being learnt by hearing, the contents of the Vedas, Upanishads and other *Śāstrās* were named as *śrutis* (meaning – 'heard'). That sounds amazing because, the contents of these scriptures constitute a colossal amount of text.... Even the now

available hymns (*mantras*) of the Vedas would be spread in about five thousands pages of printed journals. Imagine, how those many *mantras*, their linguistic disciplines, patterns of recitations, meanings and analysis, and successive deliberations in the form of *Upanishads, Purāṇs, Brāhmans* etc, were preserved for ages… by the scholars of yore? Just by the power of memory!

Harry Nelson Pilsavary, the American grand master — who was known as a magician of chess used to remember over twenty types of moves associated with different stages of the game simultaneously and used to guide the players accordingly. He used to guide so many moves at a time quite swiftly and efficiently. This was also a live example of multiple processing of exceptionally sharp memory.

Dr. Holger Hyden of the Gothenburg University Sweden has analyzed the brain functions in terms of molecular biological activities. He has found that learning a topic or method that requires concentration and thinking results in increased supply of some important neurotransmitters. The neurons excited thereby become more sensitive and expand the level of intellect.

According to Dr. Hyden, the development of the faculties of brain does not depend only on school education or what one learns from the relatives and friends, surrounding environment and circumstances; because this kind of development, by and large, amounts only to an increase in knowledge and information. He believes that — the company of people having strong will power, inner strength and sublime consciousness offers inducing inspiration for proper 'nourishment' of the brain. The elevated level of the *prāṇa* of such people gives strength to the weak minds.

People having low IQ can improve their wisdom and intellectual potentials above the average level if they live in closed contact of brilliant and talented people for substantial amount of time with a consistent aspiration to uplift their own mental level. Dr. Hyden's theory explains it as follows. As the electrical currents flow through the wires of good conductors connected to the source of electricity,

similarly, the *aura* of the bio-electrical energy of the talented, eminent and awaken brains induces certain kind of charge in the receptive brains of others who are in their contact....

Dr. George Delgado had also investigated the possibilities of transmitting the electrical charge from one's brain to excite or inhibit the activities of other internal or external centers which are sensitive to this charge. Hypnotism is a process in which the bio- electrical energy of the stronger brain is used to attract and control the weaker brains within a limited domain of influence. The notorious brainwash techniques — known in the history as being used by some of the communist regimes to convert the thinking of anti-Communists into pro ones — also involve similar effects of the brain waves.

In the present times, sophisticated electronic devices are also tried to induce or alter the electrical flows inside one's brain and hence to control his/her mental and physiological activities. Experiments of these kinds have so far been successful only to the extent that – the subject's motor and sensory activities and thinking can be controlled externally as long as the device transducer is connected to the latter's brain without causing any pain or abnormal excitement. As the experiment is put off or the external electrical impulses are weakened, the subject's original tendencies begin to take over and the effects of experiment vanish pretty fast.

While analyzing the effects of electrical currents on human brain, Dr. Delgado had remarked that — controlling certain functions of the brain by external electrical charge is like forcefully governing the weaker ones with the help of might and weapons. Such treatments can create the effects of hypnotism and mesmerism and may be used for medical applications but they cannot be successful in rousing the latent potentials of the brain. According to Dr. Delgado, one can realize and awaken the subtle powers of his brain by his own determination, mental concentration and inner strength. This conclusion also signifies the role of spiritual *yoga-sādhanās* in extraordinary accomplishments.

The stable water of a pond can be embanked with ease. However, the running water of rivers is difficult to be restrained; it requires construction of stout dams and substantial efforts for this purpose. The impulses of awaken brain (mind) are more powerful than the high-speed currents of a river. The only way to control and make use of their potential is to direct them towards some creative mental activity.

The tube-wells may supply only limited amount of water for several years. But, the naturally blown streams of fountains can continue to do so forever. Continuous flow, by the laws of nature, maintains the purity and motion of these streams. The same is true of the currents of mental energy. If all the awakened faculties of the brain are subjected to continuous creative use, they get more refined and help elevate the immense eternal powers of the brain. If the faculties of brain (mind) are aroused from the dormant state into the active one, and are subjected to controlled creative use then the brain can be fully awaken along with its astonishing potentials and talents.

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Scientific Experiments Of Mental Sublimation

Often people consider the intellectual potentials to be God gifted as per one's fate and largely remain neutral towards refining the creativity of brain. Many a times people are found complaining about not being able to control their mind or improve their intellectual activities..... They should note that practice makes one perfect. Physical fitness and might is gained by regular physical exercises, knowledge is attained by education and thorough studies, and prosperity by industrious business. Similarly, the magical Pendora's box of the brain can be 'opened' and 'cleaned'; the inner powers of the mind may also be culminated by dedicated practices of *sādhanā* performed with sincerity and faith.

Based on their understanding of the neuronal activities in the brain and analysis of different hormonal secretions etc, the psycho-chemists like Dr. Skiner hope for tailoring the mental functions in laboratories. They opine that — one's mental makeup and personality could be sublimated up to the high levels of divinity or, on the contrary could be declined to fall down to that of a demon by corresponding transformation and control of the bioelectrical and neurochemical activities inside his brain. Several Neurochemists including Dr. Allen Jack and Mark Rozenberg of Germany are experimenting on the possibilities of regulating the functions and potentials of the brain in desired direction.

Dr. Nachen Kline of the Rockland hospital New York had prepared an extract from a Himalayan herb called *Sarpgandhā*. This chemical was found to suppress mental excitations. Purification and further processing of this chemical gave rise to the production of the series of medicines like pipradol, chlorpromazine, meprobaset etc. These tranquilizers help relieve the patient temporarily from anxiety, fear, excitation and anger. One tablet of this kind can offer relaxed sleep in night. This is about western pharmeceutical developments. The Indian science of medicine — Ayurveda recommends the use o

natural products for such treatments; varieties of herbs are effectively used as *śāmaka* (tranquilizers); these are called *nidrājanaka* which induce sound sleep and *ākśepahar* which absorb mental worries and irritations. Modern pharmecologists and neurologists are also attracted towards the use of these herbs because they create positive effects in a manner harmonious to the natural functioning of the brain. The discoveries of *rishis* like Charak and Sushruta – – the founders of Ayurvedic treatment are therefore being reinvestigated by many researchers today.

As in other branches of bio medical sciences, the research experiments of neurochemicals and the effects of chemicals on the neuronal activities are first conducted on animals before making any test on the human subjects. Dr. Robert Thompson and James Maconeil of Texas University had experimented on a species of planarian and shown that the activities of brain could be suppressed or stimulated by electrical impulses. Dr. Alin Jackobson of the University of California had injected the RNA of trained rats into the brains of untrained rats. He then observed that the latter's also began to behave like the trained ones.

In the context of success of the experiments of the above kind, Dr. Ottoschimal of the State University of Michigan had declared that – – "it appears now as if we have got the power to control the human brain. However, we have to be careful that such scientific achievements are used only for the betterment of people.... We also have to be aware of the risk that some 'power hungry' nations might use such technological means to forcefully orient people's mentality towards their own ideology...."

Professors, Hazkin, Huxley, and Ecklis had received the noble prize in medicine for their significant research work in neurology. They had discovered a specific electrical charge in neurons and had investigated how this electric current flows through the neuronal circuits and transmits the information signals so efficiently as if the neurons were constantly communicating via telephones. The nerve fibers are like electrical wires, which carry the information signals through elec-

trical impulses. Each fiber has a length of over hundred thousand miles (approx. 161000 kilometers) and its thickness is about a hundredth fraction of an inch. These findings were of fundamental importance in understanding the magnificent structure and unlimited potentials of the brain. The research work initiated by Sir William Penfield in the 18th century to investigate the functions of brain is still going on and the above stated results are parts of the series of milestones in this long journey.

Neuroscientists consider that the brain has two compartments — first one, the primitive or the animal brain, which assimilates the inherited habits, inner tendencies and animal instincts and the other, the newer and more evolved brain, which is acquired only by the humans. The first part contains the functional centers of the feelings of pain, hunger, fear, fatigue, concupiscence and other desires along with the instincts of struggle and fight etc., which are essential for the survival and expansion of any species. The more developed part or the matured brain consists of highly evolved structures like the prefrontal lobes that are associated with intellectual activities. Logical analysis, reasoning, civic sense, social etiquette, capabilities of thinking, planning and decision making etc. are regulated from this part. Rise and control of emotional excitements is also triggered from this functional unit of the human brain.

Scientific experiments on controlling or hypnotizing the 'animal brain' by electrical and chemical treatments have been very successful. As stated earlier, in some experiments, electrodes connected to the brains of guinea pigs were used to transmit electrical impulses. Significant changes in the natural tendencies of the subjects were recorded. For instance, the cats were found as getting scared of the rats; in a fight of a tiger and a rabbit the mightier was made sit quietly in a corner while the tiny rabbit was triggered to attack the former with full confidence of victory.... Animals in general, indulge in sexual relations with homogenous species. However, in the above types of experiments, they were found to be excited to have sex with partners from other species too.

Similar abnormal effects were observed in the eating habits, sleeping cycles etc. of the animals who were given specific treatment by electrical or chemical means; leaving the food of their liking, they were made eat what they normally would not even touch. Several such treatments have worked well on the humans' primitive brains too — one can work at a stretch without sleeping for a long time or, can sleep as and when desired with the help of such treatments.

Experiments on the developed component of the brain encompass psychotherapeutic applications along with electrical and chemical ones. Some communist countries have even tried using these techniques for brainwashing so as to change the minds of the opponents of their ideology. Considering the intellectual brain to be the Saul regulator of the development of one's personality, several scientists have focused their research on finding the methods of psychological treatments for rousing its potentials. They accept the importance of familial and social atmosphere in molding the nature and way of thinking of a person. Some sociologists and psychologists are therefore engaged in investigating the traditional methods whose incorporation in the educational and social system would make the future generations more courageous, intelligent and virtuous than the present ones.

Renowned Russian scientist Anorbin had demonstrated by many experiments that two different types of hormones secreted by the glands in the brain into the blood stream account for the feelings of cheerfulness or gloom. Neither of the hormones is secreted automatically. The secretion of a hormone, which gives rise to specific feelings/ psychosomatic manifestations is triggered by the corresponding thoughts and emotions. For instance, the sentiments and thoughts of malice activate the secretion of hormones, which generate the feelings of mental restlessness, irritation or excitement... According to Dr. Anorbin, there are specific activity centers in the brain which are linked with reticular formations. A wide variety of hormones are secreted from these centers of brain-functions. Secretion of certain types of hormones is manifested in cheerfulness, smile, laughter, gentleness, modesty etc. The other types of hormones, on the contrary,

give rise to depression, sorrow, anxiety and perplexity etc.

Above kinds of research findings have further brought into light the enormous capabilities of our brains. The human brain is like a God which is gloriously enthroned in the kingdom of one's life and which can bestow everything one desires for. The outcome of worshiping external deities might be suspicious at times.... However, the *sādhanā* of elevating the mental system and awakening the power of this internal God of inner-self if performed with faith, zeal and sincerity will certainly bestow divine beatitudes and lead to culmination of one's life in all respects. The science of spirituality is more advanced than the modern neuroscience in terms of awakening and refining the potentials of human brain (mind).

Current research in brain sciences includes investigation of methods and development of appropriate devices by which to awaken and control specific faculties of human brain. However, each step of progress in this direction adds to the complex issues of what could be the associated side effects or how to prevent consequent misuse of the resulting techniques and products? For example, if any such invention is used sometime to create special fields of energy-waves which can change the mentality and structural or functional features of the brains of the people present within specific domains of influence then this forced transformation will be carried over, by heredity, into the off springs of these people...., continuously from generation to generation, without the possibility of any reversal.

A natural structure or process could be broken, disturbed or transmuted by a single shock or treatment. However, further changes in it may not be feasible. Wet wood might be folded into a specific shape some times. But, applying the same operation on it would not be possible repeatedly.....; it would simply break the wood. Natural system of human brain is like the wet wood in this example; the attempts of transforming its natural state by external (physical) means could be harmful and irreversible. If one would mold the wet wood into a particular shape by processing it in the heat of radioactive furnaces then no further change in its shape would ever be possible. Rapid transmutation of the brain (mental) functions by electrochemical conditioning may similarly lead to

disastrous effects which would be beyond control....

The methods of spiritual *sādhanā* were developed in accordance with the natural tendencies of human mind and were based on absolute realization of the inner strength and faculties of brain. The pioneers of this science — the *rishis*, had given due importance to careful handling and proper nourishment of the brain. They had first experimented on their own brains and bodies and invented the methods of spiritual training for the awakening of the unlimited power of subtle consciousness. A hierarchical system for practicing of the *sādhanā* of gradually higher level was devised by them so that everybody could benefit from such a *sādhanā* as per one's spiritual fitness and gradually attain ultimate success.

Practising the *yoga sādhanā* in a pure, austere and altruist life accompanied by focused thinking and *swadhyāya* can elevate the faculties of one's brain (mind). This may transmute intellectual trenchancy and mental power of a devoted *yogi* (*sādhaka*) so much that he would be able to change the surrounding environment by the currents of his sublime *prāṇa* and inspire others towards moral conduct and divine ideals. The Indian sages of yore had attained such astonishing potentials and were using them for the welfare of all living beings. The influence of their super-conscious mind used to inspire such thoughts and emotions in ordinary people which could activate specific latent centers of the subliminal currents of *prāṇa* in the inner minds of the latter's without disturbing their natural system at the structural and functional level of their brains.

The attempts of modern brain scientists are, as described earlier, based on external means. The diseases like amnesia (loss of memory) of old age are now being treated with the help of medicines like slyest *consisting* of magnesium pemoline. While investigations are on to find more effective medicines for sharpening the memory, at the same time, search is also being made for possible modes of treatment to wipe out specific pieces of memory such as those associated with tragic moments or evil thoughts...., etc. If memory of a person is so sharp that no thought or image of past events gets waned from its active region then he might grow mad because this would

block the natural flow of his thoughts and emotions.
The intensity of shocks or sorrows generated by the events of — severe insult, demise of a near and dear one or tragedy etc, reduces gradually as their remembrance gets faded in one's memory. This natural process is essential for mental health; otherwise, the over-active memory would become problematic like an over stressed and ever excited state of mind. Thus, both types of medicines would be useful provided they are given to the patients who need associated treatment in order to bring their brains up to a normal level.

Whatever we eat that is not only used in making the blood and flesh of our body, rather, it affects the orientation of our brain-functions and our mental consciousness. Each material substance, like the living beings, has its own natural tendency. The eatables are classified in Ayurveda according to the levels of *Satoguṇa*, *Rajoguṇa* and *Tamoguṇa* — the three fundamental tendencies. *Sat* represents absolute truth, asceticity and equilibrium; *Raj* corresponds to average worldly activities; *Tam* symbolizes darkness, inertness, sinful tendencies, ... of nature — of its *jaḍa* and *cetan* forms. The extent of presence of the different *guṇas* (qualities) in a substance correspond to the types of effects it (if eaten or used) would have on the physical health, thoughts and emotions. This is how different substances were categorized as 'worth eating' or 'prohibited' etc, in the traditional Indian system.

Ancient scriptures also mention of certain preparations like *yajṇacarū*, *panchāmrata*, *somarasa*, *brahmkalpa*, etc — as divine foods. The religious rituals associated with these preparations of natural products like cow's fresh milk and Himalayan herbs... were aimed at awakening, up to the maximum level, the *satoguṇas* in the corresponding substances. This was achieved by the sublime combination of the subtle energies of the *mantras* and the sacrificial fire of *yagya* and the internal power — the elevated *cetanā* of the spiritually refined persons (*sādhakas*) who used to perform these rituals.

Several rituals of the above kinds are still practiced as parts of religious tradition in some parts of the Indian society. The special prep

rations of *yajṇacarū pancāmratas* etc are distributed as *devaprasāda* blessed food among all the people participating in specific religious functions or auspicious celebrations accompanied by *yagya*.

If prepared by true saints and spiritually elevated *sādhakas*, the *devprasāda* of *satoguṇi* substances can prove to be an excellent brain tonic and mental healer. The subtle power of this *devprasāda* can inspire virtuous thoughts and divine sentiments and sublimate the internal power of the brains of all those who eat it with sincere feelings of respect and faith. This unique type of psychotherapy based on use of *satoguṇi* eatables was very popular in ancient India. The *yogis* and sages of that time had successfully used it to elevate the physical, mental and spiritual potentials of people from all walks of society and had thereby offered enormous benefits of global welfare.

The artificial life-style of the modern times has given rise to excessive use of chemicals for mental stimulation in one form or the other. The use of *brahmī*, *somarasa*, and *āsavas* of the olden days is now replaced by consumption of tea, coffee, tobacco etc; even intoxication by wine, liquor, Cannabis, L.S.D., heroin, and whole lot of other narcotics, etc. has found place in human society. Production and consumption of several types of tranquilizers has also increased because more and more people nowadays need them for relief, though temporarily, from mental stress and tension.

According to some physiologists, among other causes, excess of uric acid also induces the feelings of anger, excitation, irritation, anguish and depression.... Drs. Segamiller, Tizena, Blum and Kelly have shown that deficiencies of an enzyme called Hypogenthine Guagine Phosphorosyl Transferees gives rise to excessive production of uric acid. Deficiency of this enzyme is more common in men than in women. This is the reason why men are often found to be more short-tempered then women. If appropriate quantities of this transferees is injected into his bloodstream, a short-tempered or vexed man could be cheered up to enjoy a joyous mood.

The physicochemical imbalances might affect certain hormones and hence give rise to mental perturbations or perplexities of different kinds; it may therefore be possible to cure the associated diseases or abnormalities by chemical, electrical or other external modes of treatments. However, such attempts should be limited to specific applications only. These types of treatments should be used only if a thorough checkup shows the cause of sickness is physicochemical and not psychological; care should also be taken to ensure that the treatment would not have any side-effect on the functioning of brain. Otherwise, some power hungry selfish people could misuse such treatments and applications.

No amount of physical energy could ever control the internal power of human consciousness. Even if one thinks that the advancement of science and technology could one day be able to control the so far known functions of human brain, he should also envisage the dangers associated with such achievements. By attaining such potentials, a handful of scientists would be able to dictate the minds of all humans on the earth! The human race would then reproduce the generations of mentally slaves. These kinds of advanced developments would invite disastrous bathos of human civilization and culture. The safest way therefore, would be to learn to balance one's mind by one's own determination and follow the path shown by the great personalities to rouse and refine the mental faculties and talents in a natural way. Experiments of further sublimation and culmination of the internal (unconscious) and subtler power of brain should be conducted — under the adept guidance of experienced psychologists and mentors of spirituality — within the norms set by the ancient sages towards the noble purposes of welfare of all.

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10 **Brainwashing — Usurpation Of The Freedom of Life**

It is quite natural for the conscious and intelligent beings to make use of materialist resources and means; such attempts are justified if this use does not perturb the social harmony and the ecosystem.... Excess of consumption and luxuries are harmful for both — the balance of the cycle of nature and the evolution of consciousness. Obsessed possession of luxuries and excessive dependence on materialistic means leads to the dominance of the latter over the individual's consciousness. This is like a horse riding on his master or the boats crossing the rivers with the support of the heads of the passengers.... Except for peculiar instances of emergency, or magical demonstrations, such phenomena would be only indicative of disastrous disorder; dominance of matter over consciousness — in whatever form would results in serious consequences and disgrace.

When the attraction of materialistic comforts allures the human mind and overcomes its conscious faculties, the latter lose their freedom in a state of disguise. This is why the knowledgeable seers have criticized greed and attachments. The materialistic help is fine till it is used only for essential purposes and bare needs of healthy sustentation. The righteous way of life consists, among other things, of — earning one's own living by honest and industrious efforts; making use of material gains to meet the basic need of one's own life and channelizing the rest of these resources for the altruist objectives.

Avarice and possessive attitude engage one's life in excessive collection of comforts and luxuries and thus obstruct the ideals of humanity. These tendencies are therefore described as the roots of sins. Attachment with gains makes one possessive and selfish. Greed for such gains blocks the reasoning and debauches one's life in general. Because, a greedy fellow wants to have more and more by all possible means — even if they are dishonest and antisocial. Such tendencies are obnoxious for the individual and the society both. They also give rise to mutual distrust, jealousy and strife and malign

the environment of life....
Excessive affection and involvement with living beings also falls in the category of worldly attachments and is regarded as an obstacle in free development of life. Co-operating and friendly relationships among the people are necessary for the existence of social system. However, if someone's feelings of love and care remain confined to only a few near and dear ones they would prove to be nothing better than materialistic attachment. Moreover, if such a thralldom of sentiments is strong and persists for long, one might even forget his duties as a civilian and as a responsible member of the human society. Narrow-mindedness and selfish and possessive attitude come as natural consequences.

Driven by his attachment with a particular group of individuals, a capable person tends to give extra importance to the interests of the latter and tries to collect more and more wealth and comforts for them. In this process he narrows down his attitude and also tends to ignore the norms of fair earnings. Those who receive his over-attention and affection also suffer in the same way. Because, the unnecessary comforts — earned without work, and the 'pseudo' aplomb make them accidiec, egotist, and extravagant in general; such persons — especially the adolescents, often get addicted to wretched habits and sensual pleasures. Thus, the 'gifts' of excessive affection become the curse of their lives. The thralldom of attachments is therefore considered as a major obstacle in the elevation and progress of human life.

Feelings of sacred love and revered devotion for high ideals are described as virtues of human life, as these sentiments are rooted deeply in the inner core of consciousness. They inspire compassion and feelings of oneness with every living being... Pure love originates in one's heart (emotional center) because of the internal respect for others' propriety and serene sentiments and the feelings of caring and sharing....; these feelings give rise to friendship and intimacy on account of compatibility of thoughts and deeds. A true lover always wants to become more virtuous in the eyes of the beloved ones and also cares for the elevation of the latter's personality too. True love

inspires sharing and sacrificing instead of selfishness and possession. The above discussion is not included here in the context of social ethics, rather, it is aimed to emphasize the superiority of consciousness. The physical body and the entire material existence are there for being actively used by the manifestation of consciousness. However, when the comforts and luxuries of the body, the sensual pleasures and materialistic possessions become so important that all activities of life get confined to them then the individual's mind also gets trapped into their bonds. This vicious cycle diverts the individual soul from its original divine path. The attraction and joy of materialistic possession proves to be a disastrous bargain as it costs the freedom of individual consciousness.

The expression of bliss and internal satisfaction disappears from the life of a person whose inner self is enslaved under the thralldom of avarice, ego and attachment. The material power of the world begins to dominate the original superiority of the *cetan* in such a person. The latter's life moves within the peripheries of sorrow, dissatisfaction, fear, jealousy, uncertainty and instability.

It is important for the aspirants of awakening the internal power of brain that they prevent themselves from the attractions of selfish joys and possessions and rather practice stability of emotions and concentration of thoughts in the domains of righteous intellect and pure instincts of the inner self.

The original power of the soul should be kept alive to brighten the glow of intellect so that the latter could sharply discriminate between the ideal and the avoidable thoughts and emotions and acquire foresightedness and discerning wisdom. One who is not affected by the worldly possessions, whose mind is not pulled by the worldly and sensual desires, enjoys the freedom of the *cetan*. His soul is liberated in true sense. The ascetic disciplines of morality and altruist service in his life are self-imposed as per the inspirations of his enlightened inner self.

It is like a curse on the dignity of humanity that almost the entire human race, in the modern times, is living as a slave under the attractions and attachments of worldly means and luxuries. Except for a few great personalities — the winners of life, a vast majority of people live a dormant life without using any of the original powers of their brains. The craze for fame and wealth is a new addition — a 'gift' of modern social trends in the series of adversities created by the human society for its own decline and fall. Excess of comforts and material based potentials provided by science and technology have fueled the devastating fire of consumerization. The situation has now reached an alarming state. If this danger is allowed to persist and grow, the immense power of consciousness would vanish from human life one day. Independent thinking and creativity would lose its existence under the dominance of unchecked materialist developments. Every aspect of human life would then become artificial and exist as a parasite or slave of the scientific and technological giants.

If the attempts on developing scientific devices and methods to completely control the human mind reach success without realizing the deeper levels of consciousness in it, there will be a risk of letting masses be 'hypnotized' permanently and survive like instruments functioning under the control of high-tech products. One's original thinking, aspirations, natural tendencies, convictions, idealism, faith and emotions would then have no roles to play in his life. One would think, feel and perform what a machine or chemical reaction would force it to do. This way, a few scientists and technocrats would make use of others like puppets.

Experiments on animal brains have been successful in bringing long-term and even permanent changes in some cases. While Dr. James Oldus was able to partially control some rats by removing the natural fear of cats from their minds, Dr. D. Albert had gone a step ahead; he had been able to produce a new class of rats in his lab. These 'brain-washed' rats were physically the same as the other members of their race, but, were remarkably different in all their tendencies and activities. Dr. Robert Thomson's ex-

periments on controlling a tiny sea animal by random signals add to this series.

Ongoing research on external stimulation and control of the brain has so far been successful in awakening some parts of long-term memory. Dr. Karl Lesslie has studied what intensity and types of electrical charges should be applied on what portion of the brain in order to awaken the memories of specific time-periods of the distant past. Dr. Wielder Penfield's experimental studies, as discussed earlier, are significant in this regard. Prof. Delgado of France has demonstrated how electrical signals could be used to temporarily remove the impressions of inherited habits. He believes that the future developments of this kind would be useful in eliminating loose habits and evil tendencies so easily as the acne and boils are removed by minor surgeries. The experiments of Dr. Roger Sperry of the California Institute of Technology and Dr. Holder Hyden of Sweden all add to the success of attempts of temporary brain washing by electrical and chemical means. Notably, all these scientists have also cautioned that such techniques should be used only to treat the diseased state of mind (brain).

Neurological research has now provided substantial knowledge of the external structure, anatomy and functioning of the brain. There was a time when the nerves and marrow cells 'fat cells' of brain were considered to be the basic units of mental functions: it was believed that one who has bigger and heavier brain would also be more intelligent. Because of this belief, the diets, tonics and medicines — for mental health were also prescribed so as to increase the fat and strengthen the physique of this particular organ. Things are obviously quite different now. It is now clearly examined that the bioelectrical currents in the neuronal network play the principal role in the information processing and thought propagation through the brain.

Multifaceted research in neuroscience has shown that the size and weight of the brain do not have a direct relation with the power and creativity of the brain. The brain of a whale weighs about 7000 GMS, that of an elephant has an average weight of 5200 GMS; the

brain of a dolphin is about 1800 GMS, of a horse about 650 GMS; a rhinoceros 600 GMS, gorilla 500 GMS, dog 180 GMS and cat 30 GMS. But, this order of scale cannot be used to compare their mental potentials.

The human-brain weighs around 1350 GMS in an average adult. However, this does not have any relation with the wisdom, mental capability or maturity of a person. Human intelligence has evolved significantly since several thousands years. But, there has not been any noticeable change in its size or weight. If there were any such possibility, the brains of the intellectually advanced persons of the present times would have become the bulkiest organs in their bodies.

Sublimity, activity and connectivity of the neurons in ones brain are found to be directly associated with the development of mental potentials. The tinier the neurons, the greater the likelihood of finer responses of the brain. Our brain has a galaxy of over 10^{10} neurons, which could be classified into enormous types according to their functional varieties. The intellectual potential of human-brain is found to depend on the number of neurons and the strength of their active connections with each other.

The nucleic acid of the nerve cells works like a chemical battery to generate different types of electrical impulses, excitations and currents. It also controls the bioelectrical flows across the neuronal network. Neurochemists are engaged in experimenting to increase the production of this acid. A combination of magnesium and penicillin is found to be useful for this purpose. Some scientists at Kansas have also worked on specific protein-atoms for its synthesis.

Different neurons in the brain get linked to each other in a small fraction of a millisecond with the help of the bioelectrical currents flowing through them in an excited state. The type and strength of this flow depends upon the specific signal of perception sent from a sense organ or the mental or emotional impulse of the inner self. The electrical activity allows almost instantaneous retrieval of memory

and/or extraction and processing of biochemical information in the brain. The harmonious and systematic processing, efficiency, alacrity and sensitivity of these (bio)electrical activities in the brain account for the talents and intelligence of a person. If the (bio)electrical flow in one's brain were slow and irregular then he would become unsystematic, forgetful and dull in general.

Elucidating the functions of reticular formation and the connections between the brain and the spinal column and harmonizing its activities can help controlling the mental and emotional excitations. The feelings of cheerfulness, sorrow or enthusiasm etc can then be induced even in the absence of an external cause or circumstances, which prevail during their natural occurrence.

Electrical charges, radioactive radiation and chemicals affect the physical and mental activities because they influence the activities of specific functional centers and hence the bioelectrical flows in the brain. The effect of intoxication is a well-known example of the chemical reactions of this sort. A variety of chemical compounds have now been identified which can temporarily trigger mental excitations and feelings of specific kinds.

Prof. Anokhove of Russia had investigated the formula of preparation of aminazyne. The molecules of this chemical bind with some pain-sensing sites of the reticular formation and inhibit the feelings of pain by preventing the secretion of certain hormones. Owing to this effect, a patient treated by this drug does not feel pain in any part of his body. Even if there is a wound in the body, its presence would not be felt by a person if he is under the effect aminazyne; no anesthetic condition or forced sleep is required to suppress the pain in this case. This is a medicine of adrenal group. With the help of such a medicine, one would not feel any pains even if one were in the painful state of delivering a baby or suffering from stomachache, headache, and sciatica, etc. Surgical operations also become virtually painless for the patients treated by the medicines of the adrenal group.

Modern medical technology has advanced significantly in many areas including plastic surgery, organ transplants, radiotherapy etc. Simultaneous research on brain and psychosomatic diseases has also gained momentum in the recent times. Efforts are also on in some laboratories to investigate techniques of controlling the mind in a desired manner. Research on brain-control is welcome so long as it aims at regulating the deficient functioning of the brain and the nervous system with the help of medication and external devices. However, over ambitious and unchecked developments in this area of research would be risky. As stated earlier, such a progress might be misused by a few experts and might prevent the creativity and other natural potentials of brain and destroy the independence of mind.

Present era has witnessed the worst misuse of religion, philosophy, art, literature, audio-visual tools, press, radio, television and other modes of influencing the public mind. Technological deveiopments have been by and large misused in the efforts of creating false impressions and virtually mesmerizing the masses in favor of specific cults, political parties, products of particular groups of companies etc. Independent thinking of the common man has already been captured in such illusions. Attempts of 'brain-washing' or 'orienting' the minds of people by altering or controlling the functions of their brains would cause irreparable damage to the normal progress of human society. Such attempts ought to be restricted well in advance in order to prevent the extinctive consequences. It should be again noted that the natural potentials of human brain, if allowed grow freely and saved from wastage and misuse, could bring a glorious future of human dignity.

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Elucidation of the complexity of the structure and enormous functions of the human body is like revealing the secrets of a mysterious world. Most astonishing part of this marvelous creation is the brain. It is the conductor of the conscious and unconscious, known and unknown functions of a human being. The multiple decision making and regulatory functions performed continuously by this organ can be compared with the activities of administrative problem-solving, supervision, and management, etc, carried out by the director of a gigantic industrial system.

It is said that sitting beneath the *kalpvṛkśa* (a heavenly boon-tree described in the rhetoric representations used in the *Puraṇās*) fulfils all desires. The existence of such a tree might be doubtful. However, the brain is an apparent manifestation of the *kalpvṛkśa* naturally bestowed on every human being. The 'worship' (by due recognition, respect and creative use of its potentials) of this 'heavenly gift' can certainly endow an individual with all the virtues and powers which he endeavors to acquire in life.

The physical body and existence of a human being is born from the mother's womb. But, the birth of a wicked, dullard or a wretched character…., or, an eminent, ascetic or dignified personality…, etc., originates from the layers of unconscious and subconscious mind in the deeper depths of his/her own brain. The key of character development lies in these arcane layers of human brain. The talents of spiritual masters, erudite scholars, eminent philosophers, scientists, artists etc. are all sprouted from the subtle cores of the brain. Imbalance or disorderly function of this center can turn one into a fool, cranky or an insane person. A healthy brain is the source of enormous potentials. Arousing of its super-conscious activities can culminate an individual's talents up to the highest realms of physical, mental, and spiritual strength and enlightenment.

Every activity — including that at the cellular and molecular level, of the human body is controlled by the brain. Besides the supernatural

attainments of spirituality in its sublime state, the ordinary, even the routine functions of the human mind are also majestic. The power of thinking, variety of feelings — of sorrow, cheerfulness, satisfaction etc., the potentials of contemplation and resolution of unlimited types of problems are indeed remarkable. The results of further scientific research are now opening many more facets of the amazing capabilities of the human brain.

It has been found that there are specific centers in the brain. These, if stimulated, can eliminate all the pains of severe bodily injuries and mental agonies. These centers could be awaken by introspective search, realizations and spiritual *sādhanās*. Several centuries ago, the use of intoxicating substances like morphine as pain killers was common like that of the analgesic medicines today. However, it has now become clear that the use of such external means causes more harms in the long run as compared to their instant, though, short-lived positive effects. Experts opine that the occurrence of pain in any portion of the body indicates that there is something abnormal in the physiological or biochemical state of this portion. Which is why it lies in disharmony with the nervous system. There are two types of pains — short-term, prickling and chronic or long-term. Both trouble the body. The long lasting pains disturb the mental state too. This situation induces mental tension and often gives rise to the psychosomatic disorders such as — schizophrenia, illusions, paranoia etc.

Slight disordering in the functional regions of the brain disturbs the entire body and mental system. Often, one uses instant remedies of analgesic medicines against the complaints of headache etc. Removal of mental stresses of higher intensity is sought with the help of intoxication. People of weak inner strength tend to use Morphine, Methadone, Heroin, Melsadine, L.S.D., and several types of narcotics in order to get relief from despair and depressive and stressful agonies of life. These drugs virtually paralyze the normal perceptibility of different organs and suppress the sensitivity of the nervous system towards pain. People get addicted to such 'remedies' and eventually lose their physical and mental health forever.

Medical experts consider that the limbic system in human brain can secrete specific neurochemicals, which alleviate the sensation of pain or counter the tension caused by mental stress. Emotions are supposed to trigger the activities of the limbic system. As the sensory nerves carry the sensation of pain to the spinal cord, the efferent receptors of the limbic region in a healthy brain are activated and they secrete two phaline peptides that serve as natural 'pain killers'. Betalypotramine (LPH) is found to be the forerunner of encephaline.

Experiments in immunohistochemistry have shown that a large number of neurons — filled with encephalon are clustered at different levels of the cerebrospinal axis; these clusters are denser near specific pain-sensing center on the gelatinosa of the spinal column. The neurons are also present near the nerves connected to the digestive system. The techniques like acupuncture invoke the secretion of encephalon at specific centers as and when required and thereby offer healing and remedy from pain without any medicine or other treatments. Many surgical operations are performed successfully by suppressing the sensation with the help of acupuncture without using any anesthesia.

Frontline researchers in Parapsychology consider that the secretion and concentration of different hormones like encephalon, endogens — painkillers can be regulated by harmonizing the activities of brain with the help of *dhyān* (deep meditation). *Dhyān* is a risk-less spiritual exercise, which offers enormous benefits. Experts of this science prescribe meditation as an effective remedy against pain and mental stress and strain instead of the killer medicines, steroids and intoxicating drugs.

Collaborative research in neurochemistry, neurophysiology, psychology and other areas of neurosciences has unraveled only a fraction of the unlimited potentiality of human mind. The unknown aspects of human consciousness are enormous as compared to what have been deciphered by the modern sciences so far. The real power of human mind (brain) is beyond imagination. One would be amazed to find what an astonishing system exists in the tiny 'pocket' of the skull.

It is unfortunate that only a small fraction of this colossal source of conscious energy is used in the physical, mental and intellectual activities of most humans. Maximum of its creative power remains waned in a dormant state throughout one's life. Authentic examples of the observation of strong willpower, clairvoyance, exceptional intuitive intellect, etc present only a glimpse of the super conscious levels of the human brain. Activating the unused hidden layers of consciousness in human brain could attain supernatural potentials and talents. The simile of *kalpvṛakśa* there fore appears to be quite appropriate here.

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Eminence of scholars, writers, scientists, philosophers and other intellectuals and the extraordinary talents of artists, successful businessmen, industrialists, politicians, etc reflect the multiple dimensions of creativity of the conscious mind. The importance of brilliance, alertness and the above types of glorious faculties of the conscious mind is well known. However, few people realize the existence of the unconscious, subconscious and super-conscious levels of human mind. These subtle layers of mind are more mysterious and astonishing. Thorough research in deeper aspects of psychology also indicates that the micro levels of mind are extremely powerful. However, owing to their subtle nature their existence remains latent and unknown to most people. Because of this the experimental analysis of these faculties of mind has not been possible by external means and the attempts of arousing the latent potential of mind remain confined to spiritual practices only.

As stated earlier, the researchers in Gnositic Psychology have analyzed only about 7% of the active domain of the unconscious mind. It is argued based on these research findings that the natural tendencies, hobbies, inherited habits and adaptability to acquired nature — all originate from the unconscious mind. Parapsychologists consider the latter as the most wonderful, powerful and sophisticated creation; they state that if its immense potentials were realized, sublimated and used like the conscious mind then the human society would have made thousand times better progress than the most advanced developments of today. They believe that by rousing the latent energy of mind, we can perform all the arduous tasks, which at present are carried out only with the help of sophisticated instruments and advanced technology. The scientific area of research in these aspects of human mind is known as "Psychocybernetics".

The experts of the spiritual science of supernatural faculties have mentioned that the agility of the conscious mind prevents the expression and realization of the unconscious and subtler levels of human mind. The ever-active tides of an ocean can be seen by anybody.

However, the vision and acquisition of the enormous prosperity lying at its bottoms becomes possible only for those adventurous divers who go deep beneath and search for this hidden treasure. The same is the case with the gigantic ocean of consciousness existing in human brain. Whatever has been elucidated about the activities of the human brain with the help of modern techniques like EEG pertains only to the bio- electrical impulses of its conscious part. This, at the most, corresponds to about 13 % of the total bio-electrical activity of the brain in a normal human being.

Routine functions of hearing and vision are normally performed by our conscious mind. However, there are instances when the conscious mind is not able to perceive any sound or light. The perception of sound and visual cognition then takes places in the domain of unconscious mind. Such situations often arise when the type of sound or scene produced encountered is beyond the audible or visible range of the conscious faculties of mind. The instances of this kind also occur in the state of deep sleep when the conscious mind is not available to recognize and process the signals received from the sense organs. The unconscious mind is never asleep. The sonic or visual signals perceived by the unconscious mind create intense impressions on the inner self. The assimilated effects are sometimes manifested in drastic changes in one's behavior and attitude. The examples stated below illustrate the impact of the subconscious and the unconscious minds which could be potentially used in psychotherapies.

In the summer of 1997, a team of researchers had arranged for transmission of a vague message — "eat parched rice and drink Coca-Cola...." after every five minutes during a film show for customers arranged in Photoplay, New Jersey. The message was of no importance to the conscious mind but its repeated reflections induced in the unconscious mind were seen in surprising outcomes of the experiment. The records in that market soon after showed an increase of about 5.75 % in the sales of parched rice and over 38 % in that of Coca-Cola.

Dr. Hall Bracker of the medical electronics department of the Louisiana University has developed a tachistoscopic projection device for experimenting on the unconscious mind. In one such experiments he repeatedly conveyed the recorded message "I am honest, I will not steal..... It is wrong to steal. If I steal, I will be caught..." — to a group of his patients. As a result, significant positive effects were recorded in terms of the change in the lathers behavior; even those who had criminal mentality were found to have become sincere and sober... Whether it is hypnotism or some kind of conditioning of the unconscious mind by audiovisual signals, the experiments of this kind resemble, to some extent, the elementary training phase of spiritual practices.

Dr. Harvard Chevron of Michigan University has analyzed (with the help of EEGs) the signals received in the unconscious state of body, on the brain waves. Matthew Irdaily, expert psychologist of the Brooklyne College has also experimented on repeated reflections of such signals/messages on many human subjects during conversational and (day) dreaming states. Both kinds of experiments have illustrated significant potential of the unconscious mind. Newer kinds of experiments involve inducing positive effects or 'advice' by biofeedback techniques adjusted according to the on-line EEG records of the DC potentials. The success of such experiments on unconscious mind also shows that the *yoga-sādhanās* aimed at awakening and controlling the unconscious mind are derived from logical and scientifically justified grounds.

During his experimental studies in psychology, Lloyd Silverman of the New York University had conducted a specific experiment several times on some chronic cases of mental instability and addictions. In each sitting per day, the teenager patients were sent a motto — " Mummy (mother) and I are one...", vocally for five minutes. The message was repeated at such a rapid pace that the conscious mind was hardly able to concentrate on it. The results of this experiment — conducted for 10 successive years — were quite remarkable; many of the subjects were able to get rid of their mental evils and addictions; many others, who were averse to studies and hard work

started making progress in their schools and colleges. In a similar experiment on autosuggestions to inspire the unconscious mind conducted in 1975, mental tensions and obesity of over 30 women patients were alleviated in record times. Some counselors (psychologists) in the Montana University had also used Silverman's technique; in a single year — 1979 itself, they had helped many people in getting relief from the addiction of smoking.

In view of the creative effects of his auto-suggestive and biofeedback methods, Silverman had challenged those who considered Freud's Principle — of the influence of unconscious mind on one's personality — as being an imaginary hypothesis only. Dr. Nathan of Washington University had presented an independent but supporting opinion in the 1980 issue of the Annual Reviews of Psychology. He considers unconscious mind as a major factor to be focused in a thorough psychological analysis of human beings. He argues that — "Freud's theory emphasized only a narrow domain of the impact of the unconscious mind, namely, that related with sexual desires. This is an incomplete and erroneous conclusion, which has created misconceptions about the real potentials of the unconscious mind. Deeper research in this field should focus on the analysis and use of the power of unconscious mind to help development of positive and creative faculties and elevation of personality rather than the negative aspects which trigger animal instincts and suppressive complexes". In the ancient Indian systems, music was developed as a powerful medium for psychotherapy. The Samveda emphasizes the majestic role of divine music in conditioning and sublimating the mental potentials. The *rishis* had composed and compiled classical music through afflatus. They had sincerely used this music for controlling their mind and rousing its immense qualities at the subtler levels of consciousness. They had attained supernatural talents and knowledge by such experiments on adept use of music in their disciplined and ascetic life.

As long ago as 600 BC, the renowned geometrician and philosopher, Pythagoras had also propagated the importance of music in psychotherapy. Lambolycus of Syria too had supported the use of

music as a remedy against complications caused by mental tensions and stresses of over-ambitious life style. Positive effects of calm music on mental health have received substantial recognition in the modern age as well. Experimental studies of the impact of music on unconscious mind add to the series of the above mentioned observations on the assimilation of audio-signals in the unconscious mind.

Effects of visual perception are also considered important in inspiring the unconscious mind. Intensive research of a reputed psychologist — Prof. Kampbell, has shown that the visual reflections create significant impressions on the unconscious mind. He says that the unconscious mind stimulates specific bio-electrochemical reactions according to the type of the visuals perceived by it. These reactions affect the entire body.

Kampbell had studied the reflections in the subject's mind when the latter is engrossed in watching the glow of a flame. His analysis suggests that waves of immense bliss are generated and the person feels intense peace in this state of meditation. Experimental research of Dr. Lasslie M Lecron of America has also proved that the flame of a lamp or a candle has significant applications in psychological and psychiatric cure. The practice of *trātak* in the *bindu yoga sādhanā* is a refined experiment of this sort.

The practice of *trātaka* significantly helps restraining the agility of mind, streamlining the thoughts and supports mental concentration–– which is a great achievement in view of the immense power of the controlled mind. The customs of igniting lamps in the temples, candles in the churches and worshiping fire in the *agyārasis*[s] at the time of prayers are indicative of the above mentioned psychological importance.

The eminent experts of the Indian *yoga sādhanā* have been, since the time of yore, successful in awakening the unconscious, subconscious and the super-conscious layers of mind with the help of dedicated practices of *pratyāhār, dhyān, dhārṇā* etc. This is how the great *yogis* attain supernatural faculties of hearing or seeing beyond

the limits of space and time. Telepathy, clairvoyance, prophecy, knowledge of latent objects, thoughts or emotions, etc, are usual offshoots of such attainments. The *rishis* were regarded as perfect beings because of their absolute success in the external physical as well as internal — pertaining to thoughts, emotions and spirituality – – domains of life.

Today's man has lost his inner strength and is living in a pathetic state of mental and emotional weakness, disorder and dormancy. The situation will certainly improve if the *yoga* practices as guided by our ancestors are experimented in modern scientific light and brought back in the mainstream of human life. Everybody would then be able to realize and make best use of the internal power of his own mind to live with divine dignity.

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13 The Wonders Of Neuro-chemicals

The anatomy of body, the weight and size of brain are almost the same in all humans. God has been uniformly kind to everybody in this respect. The whites and the blacks, the tall and the shorts, the illiterates and the savants — all have brains of similar size and shape with same anatomical structure. In spite of that, we find significant diversity of the intellectual and mental faculties, talents and skills in the human population.

Some people are wise and exceptionally brilliant, while others, despite living under same socioeconomic conditions and having similar physical health and appearance, find it difficult to efficiently perform even the ordinary tasks and essential duties of life. Some are altruists, generous, affectionate and kind, while some are apathetic, selfish and cruel. Some have cheerful temperament and enthusiastic endeavor to perform all duties including the daily chores; some enjoy playing and have special talents in sports; still there are many who are not interested in any game, they live a lethargic, dull and aimless life...., and life is a burden for them. Why this contrast? How the mental, emotional and intellectual levels of people vary so drastically? These questions have always motivated research in the areas of behavioral psychology and neurochemistry. The quest for elucidation of the magical world of human-brain has been existing since the time of the existence of humans....

The scientists of yore had pressed the approach of subtle science of spirituality to gain absolute knowledge about human mind and to creatively control the functioning of the brain. Modern scientists have adopted an approach beginning from the gross analysis of the physicochemical reactions and study of their effects manifested in behavioral changes. Progress of this research is now opening newer dimensions of the subtle aspects of human brain.

The study of hormones has offered amazing information to the researchers who consider physiological and biochemical processing to be the basic cause of different functions of brain. The front-line

researchers now believe that the root cause of secretion of the enormous varieties of hormones are yet unknown because of the subtle nature of different levels of consciousness affecting the mind.

Even a single drop of some hormones secreted within the brain is found to bring drastic changes in the body-functions. The temperament and the emotional manifestations too are found to vary because of the fluctuations in specific hormonal levels. Many hormones and neurochemicals — contained in the tiny neurons, have now been identified and analyzed in the laboratories. These include, those found to be associated with the fatigue or energetic state of the body and the alacrity of mind, and those which can stimulate or suppress the expressions of love, compassion, cheerfulness etc. The hormone secreting glands seem to offer even newer wonders before the endocrinologists to further accelerate research in the related areas of neuroscience.

It is a surprising coincidence that the existence of the mysterious neuro-chemicals came into light through the study of some diseases like aboulia and amnesia in which the mind goes into depression or becomes dull and dormant by losing memory and intellectual sharpness. Some scientists at the American National Institute of Mental Health had found that the activity or inhibition of an enzyme called MAO (Mono Amine Oxidase) is largely responsible for the changes in people's temperaments. The normal as well as the unusual emotional expressions of different persons, cheerfulness and irritation, alacrity and accede etc, are found to depend on the inhibition or activation — by other enzymes and chemicals — of the neurohormonal secretions of MAO.

According to Dr. Andrew Baptist, a behavioral psychologist by profession, there are two major classes of neuro-chemicals: one, the group of MAO-enzymes and the other, that of different neurotransmitters such as, epinephrine, dopamine, serotonine, etc. The MAOs suppress the functions of the neurotransmitters. A third group of neurotransmitters is also discovered which preserves the activity and blood-level of the neurotransmitters. This helper group mainly con-

sists of the enzymes of endorphin category. The research findings of Dr. Andrew and others indicate that excessive secretion of MAO often triggers lethargy, dullness, mental restlessness and tension. The activation of the second group can suppress the effects of MAO and induce alacrity, enthusiasm, relaxation and cheerfulness. The enzymes like encephalon etc of the endorphin group further enhance the activity of the neurotransmitters and accelerate positive effects on mental and emotional conditions. People are found to show greater mental concentration and efficiency in their tasks-in-hand when the secretion and activities of the neurotransmitters and hormones of the latter groups are on.

Drs. Kraftsman and John Crookschank of Baltimore University have carried out intensive research on human psychology and psychosomatic diseases. The results of their studies suggest that whenever the activity of a MAO increases, it inhibits the normal secretion of the neurotransmitters in the brain. This gives rise to mental restlessness, gloom and distress. Similar effects are induced by the rising toxicity in the environment. In view of the analysis of positive effects of some anti-depression drugs, these scientists prescribe the hormones of endorphin family as the inhibitors of the negative effects of MAO. Persons having substantial levels of active endorphins enjoy an open, happy and healthy mentality — free from emotional complexes and stresses. Such temperaments can be triggered to some extent by balanced doses of anti-depressant medicines and steroids, which stimulate the secretion of different neurotransmitters.

Apart from the medications, some behavioral psychologists also found use of autosuggestion, hypnotism and biofeedback techniques as effective. They opine that the steroids, though useful in inducing positive effects by activating the secretion of the corresponding hormones, are not harmless. The side effects of steroids are often so severe that they create other physiological and mental problems that are more serious and require further medication.... In order to avoid this vicious cycle, these and many other researchers are now investigating the alternative techniques — of autosuggestive biofeedback based counseling etc to maintain healthy activities of neurotransmit-

ters in a natural manner. Considering the increasing pollution at physical, mental and emotional spheres of life and the associated rise in the occurrence of mental stresses, hypertension, depression and other psychosomatic disorders, attempts of this kind appear all the more important and necessary.

Stanford Research Centre in USA has a separate department for studies on oriental meditation-based psychotherapies. The scientists of this centre have found that the above mentioned three major types of hormones/ neuro-chemicals — responsible for inducing gloom and despair or energy and joy etc, express the reactions of internal emotions through the medium of the pituitary gland and the hypothalamus in brain. Their experiments show that these neurohormonal secretions can be regulated by the practices of *dhyān*, *dhārṇā*, *yoganidrā* and other *sādhanās* of mental and emotional control.

The results of initial research on a few hormones — whose secretion in the blood manifests remarkable reactions and effects — had excited the scientific community towards further research on these astonishing biomolecules. Hormonal effects on physical structure of the body, complexion and beauty, youthfulness and aging, puberty, concupiscence etc, and the 'fight or flight' type reactions against mental stress and strain, etc have been the focus of research in neurochemistry and endocrinology.

Growing research in the fields of brain-chemistry or neurohormonal secretions has offered deeper insight into many aspects of behavioral psychology and personality- development, which were unknown to the modern scientists until recently. Although, the science of spirituality and associated *yoga-sādhanā* had detailed mentions of the subtle aspects of human mind-body relationships, the modern scientists were not attracted to study them owing to the lack of visible evidences. The laboratory research on the 'micro world' of hormones and recognition of the tremendous effects of mental and emotional levels on neurohormonal secretions has now opened up new frontiers of collaborative research in associated fields of the ancient and modern sciences.

According to the experts of neurochemistry and neurohistopathology, the chemistry of brain is quite peculiar and arcane. Several hormones that were believed as secreted by the glands in the digestive system and were found present in the corresponding portions of the body have now been discovered to be present in the brain as well. The group of such hormones includes ACTH (acetylcholine) and epinephrine. Significant amount of cholesystiqunine — responsible for controlling acidic secretions in the stomach and glucoverticoides, secreted by the adrenal gland, is detected in the brain too. Scientific studies suggest the possibilities that these hormones might also be reacting as neuro-spinal transmitters whose excess in the brain may cause different psychosomatic disorders.

The psychosomatic diseases manifested in peptic ulcer, cardiac arrest, mental instability, irritation, Bowel's syndrome, ulcerative colitis, etc, are believed to be caused by the imbalance in the concentrations of above hormones. It should be noted that the occurrences of these types of diseases are increasing at a rapid rate and at present almost three fourth of the world population — especially in the developed and developing countries is suffering from such abnormalities.

Little perturbation in the normal secretion pattern of the hormones such as the dopamine, gawa, serotonine etc, causes deformation in very sensitive centers of the brain and the nervous system and gives rise to amnesia, mental instability, Parkinson's disease, ...etc. A healthy, well educated, multi-talented scholar might also lose his memory and intelligence during the transition period of aging when such hormonal disorders are more likely to occur. Those, who remain cheerful and keep themselves active in creative tasks — and thus naturally restrain the secretion and negative effects of the MAOs and inhibitors, do not risk the hormonal problems in the old age.

Neurochemists have found that the hormones secreted by the pineal and pituitary glands not only control the sex related activities, but, more importantly, they also affect and regulate one's decision making capabilities, thinking and sense of time and space etc. Thus, the

hormonal secretions associated with puberty serve multiple purposes. Scientific studies have shown that the level of androgen — sex-hormone in males which is responsible for manhood and body-characteristics including the shape of testicle etc — and the ability of time and space recognition and grasping power of men are interrelated. Lesser the level of androgen, more would be the possibility of impotency and mental dullness. Similar interrelationships — between mental sharpness, sex related functions of the body and mind, and specific hormonal secretions — are found to exist in the females too.

The complexity of neurohormonal chemistry is so high that only a small fraction of the related reactions and functions has so far been analyzed in the laboratories. Collaborative research in psychology, endocrinology and neurology has become essential for identifying some of the latent 'activity and sensory' centers in the human brain. The collective efforts of researchers at the Michael Riz Hospital, Chicago, Massachusetts General Hospital and the Stanford Research Centre are progressing well in this direction. Let us hope that deeper investigations in this regard would one day provide the knowledge of the subtle centers like — *sahastrāra, brahmrāndhras, ānandmayakosha, āgyā chakra*, etc, described in the ancient science of *yoga*, in a manner comprehensible to the modern scientists.

Findings of the above kinds of research would explain, in new scientific light, the mechanisms of rousing or suppressing the development of personality and transforming human behavior with the help of activation or inhibition of these subtle centers of consciousness in human brain. Elucidation of psychosomatic disorders and knowledge of controlling related mental complexities would be the other benefits of these developments.

The now available knowledge of the sensitivity and multiplicity of neurochemical reactions gives us a glimpse of how the disciplined experiments of different *sādhanās* could awaken the internal powers of the brain. Practicing of many spiritual *sādhanās* is easy, harmless and inexpensive. Everybody can benefit form them in a natural way. Adopting them in day to day life can bestow manifold benefits

on human society as compared to the present accomplishments. The sincere practices of specific *sādhanā* can transmute an ailing human life into a source of immense peace and creative bliss.

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The hormone secreting glands — the endocrine glands are described as stars of the interior universe of human body in a book entitled 'Astrological Correlation with the Ductless Glands'. The book further states that — as the mutual dependence and cooperation of different planets in the solar system maintains the balanced existence of the entire system, so do the collective efforts of the ductless glands in regulating harmonious functioning of the mind and body. Under this analogy, the book compares the *āgyā cakra* (pineal gland) with the Sun, pituitary gland with the Moon, adrenal with Jupiter and thyroid with Mercury. Simile of mars is given to the parathyroid and Venus to thymus.

The movements of the planets and the radiation emitted from their surface affect the matter on the earth at molecular and atomic level and also influence the conscious elements — the psychological factors. The activities of the interior stars the endocrine glands in the solar system inside our body more intensely affect the functioning and conditioning of the latter at physical, mental and emotional levels simultaneously.

The author of 'Occult Anatomy' describes these glands as etheric centers and correlates their stimulation with the interplanetary conscious activities _ expressions of cosmic consciousness. The material elements and the biomolecules in the living beings on the earth all receive the effects of cosmic activities through their own inter atomic movements. The hormonal glands are also considered to be associated with the latent centers (*cakras*) of supernormal energy. Their stimulation is associated not only with the activities at the physical level in the body but also at the mental and emotional levels. Thus, in view of the author of the above book, these glands must be having some linkage with the subtler centers of a superior consciousness, which bestows a variety of boons on human beings through the hormonal activities of these glands.

As per the research-results of Dr. Charles R. Stoquard, the expression of love, affection, compassion and other soft sentiments is manifested through some endocrine hormonal secretions. If the latter are obstructed, one would develop an insipid, apathetic and eventually a cruel personality.

In his book entitled 'Anatomy of Emotions' Dr. Hyzel throws light on the hormonal secretion mechanism and effects on protoplasm. In his view, the existence of *cetan* in a human being is not there simply to maintain the vital energy, rather, it seems to serve the great purpose of sublime expression of the eternal Self (the soul). It has absolute power of automating the enormous activities of the body and elevating the thoughts and intellect to the high realms of divine humanity. The mutual dependence of hormonal secretion on emotional status and vice-versa is amazing. This implies that the origin and manifestation of the elements of life — expressed in the hormonal functions have as much spiritual basis as the more obvious physical one. The source of their existence therefore appears to be in *cetan* instead of *jaḍa*.

Dr. Ivo has emphasized the predominant role of hormonal glands on one's psychology and personality development in his book entitled – – 'Glands of Destiny'. He cites the example of Napoleon Bonapart — stating that, Napoleon lost the battle of Waterloo because his pituitary gland had become defective; he was therefore unable to take any decision; in the mangled state of mind he lost the opportunity of turning the strategic planning into his favor. The inference of Dr. Ivies is based on the postmortem report of the little corporal in which the deformation of pituitary gland was a significant finding.

In terms of occult anatomy, the visible or perceptible components of the body and their activities do not form the system of life. The conscious energy working in even the tiniest form of these elements is the real source of life. The subtle aspects of vital function in the living beings are still beyond the reach of the knowledge attained in the fields of physiology, anatomy and other biomedical sciences. In othe words, our contemporary knowledge of our own body is yet incomplete.

Consider the endocrine glands for instance: Very minute, almost negligible — as compared to the amount of blood in our body, quantities of hormones are secreted by these glands. The secreted amounts get dissolved in the blood and produce tremendous effects that are the source of normal functioning of human body and mind in many respects. How are these glands developed — what is the source of their existence? Why and what types of transformations take place in their activities? Why do the biochemicals secreted by these glands vary so much in nature? What is the mechanism of their significant effects on body-functions? These questions yet remain unanswered. So far, only the manifestations — in terms of normal and abnormal growth and functions of the body and behavioral aspects — and chemistry of some of the hormones secreted by these glands have been elucidated. However, the research studies are silent on — why, from where...., these effects?

Early research in neural chemistry had found the presence of some hormones which are secreated by the endocrine gland and which relate temporary or permanent effects on specific organs or physico-chemical functions of the brain. Advanced results have found newer secrets in terms of the a[illegible]tion of these hormones with the nature and inherent characters of humans. In view of their tremendous effects on regulating the physical, mental and emotional states of a person, the hormone-secreting glands appear like the 'fingers' of a hidden juggler who makes the humans dance like puppets under the control of the hormonal 'threads'.

The internal hormonal and other neurochemical secreting system — the endocrine system has long been a challenging puzzle for the anatomists and physiologists. Whatever hypotheses and inferences are drawn in one point of time, they are often required to be modified or changed after some time because of the newer or contradictory observations.... The secrets of this system seem to be hidden behind such a curtain, which gets more entangled into a mesh of unknown facets whenever opened up a bit.....

As early as during the times of Luis XV in France, an anatomist named Thufie had conjectured the presence of a somewhat supernormal in terms of physical existence system in the body which secrets special juices chemicals that can significantly vary the functions of different components of the body. An Italian physiologist, Dr. Iustathiyas had reported a well-structured hypothesis on hormonal glands sometime in 1563. Later on, some researchers of the Vodax Institute of Science had thrown light on the muzeneal glands. Around 1850, Dr. Karlinge of Britain and Dr. Yeri of Paris had given experimental evidences to illustrate the remarkable effects of some hormonal secretions inside the body on the physiological and biochemical functions. Research in the fields of hormones/neuro-chemicals geared up gradually in the latter years.

At present, the research on neurohormonal secretions and allied topics is one of the most active areas of advanced sciences. Dr. Luis Warman of Columbia university had recently published and article entitled 'Glands Regulating Personality' to highlight the predominant role of hormonal glands in the psychological makeup of a person. The author states that there are some special glands in the body, which are tiny in size but colossal in effects.... Besides their apparent role in controlling the organ development, metabolism and other activities of the living body, they also have significant influence on the mental functions. Disharmony of some secretions may lead to the decline of one's personality in many respects; one can even go whimsical or insane because of such imbalances. An orderly controlled, refined state of such secretions, on the other hand, might endow one with a courageous, foresighted, cheerful, charming and talented personality.

Chorine Helen's "Occult Anatomy" throws more light on the activities of these ductless glands. He has analyzed their effects on human psychology and shown the possibility of their connection with the spiritual powers. While discussing the questions of 'What is the relation of these glands with the sensory nerves? Or, What are their anatomical positions?....etc,' the author argues that '— "the drastic

variations caused by certain chemicals hormones in the state and function space of the body and mind cannot be based on some physicochemical reactions only.... These astonishing activities are subtle in nature and appear to be governed by the latent effects of superconsciousness. The existence and wonderful functions of these glands thus seem to be direct manifestations of a divine power...."

The anatomical details on the size, location and the (hormonal) secreting functions of the principal glands — Pituitary, Pineal, Thyroid, Parathyroid, Thymus, Adrenal, Gonads, and Spleen, can be found in any comprehensive book on anatomy and physiology. Findings on new effects of the earlier studied glands and the discoveries of new glands/hormones are frequently reported in the corresponding research journals. Research on neurohormonal chemistry is also growing at a rapid pace and newer results are being obtained and reported almost every month. Detailed discussions of these are neither feasible nor desirable here. It would be sufficient for us to note that these glands secrete some special kinds of biochemicals (hormones) directly into the blood stream. The secreted hormones reach specific points in the body and the brain along with the blood and create wonderful effects. This, in normal conditions results in efficient maintenance of orderly functions of the body and mind. Little imbalance or disharmony in the level, stimulation or activities of these 'regulator chemicals' often causes irreparable damage or deformation in the normal growth or health of the physical and mental system of life.

Some people are dwarf, some grow high up to exceptional and inconvenient limits...; some suffer obsession and some are bony; some youths become impotent while some wander under the thralldom of excessive concupiscence in the old age too...; some bear the 'curses' of dull mind and some are 'gifted' by extraordinary brilliance and intellectual power; some over-eat, some hardly eat anything...; some people can work round-the-clock every day having almost no sleep for several consecutive days but some others, on the contrary, need sound and long sleeps as natural requirement for creativity in the awaken state....etc — all these diversities and abnormalities are caused by hormonal variations in general.

These disorders are also found as responsible for sudden attacks of certain maladies, disability of specific motor or sensory activity, excitation or numbness of some parts of the body or of some mental faculties, etc. Despite this knowledge and multidimensional research on hormones, no specific method or mechanism has yet been discovered to harmonize the secretions or to retired the imbalance of normal hormonal levels...

Oral or intravenous medicines have hardly any effect on the hormone secreting and related activities, *in-vivo*. A surgeon's sophisticated tools also have no reach there. Attempts of controlling a hormonal activity or regularizing its normal concentration by medication or surgical operations are extremely risky as they often perturb the fine tuned natural functions of the tiny glands and/or disrupt the efficacy of hormonal effects and thereby give rise to more severe abnormalities and disabilities.

Transplantation of different organs of human body has now become possible because of the advancement of medical sciences and technology. However, no progress has yet been made on surgical operations of the hormonal glands. In case of kidney or lung failure, the damaged or diseased organ is replaced and the transplanted organ gives almost a new and healthy life to the patients...; legs, hands or ribs etc. — lost or damaged due to an accident or a disease — can be replaced or given mechanical support to run the chores of the body... But, trying a surgical operation or medical treatment on the hormone secreting (endocrine) glands is dangerous like putting hands in fire... In pure anatomical terms, these glands do not seem to play any role and appear as unnecessary 'abscess', which could be cut and removed without any apparent trouble.... However, as stated earlier, doing so could invite abnormalities that might prove to be worse than death....

Deeper research into the effects of hormones has revealed that not only the bodily functions but the complex mental reflections and emotions are also associated with the endocrine system. The endo-

crine glands play a major role in shaping the overall personality of an individual... Graham Hazscrines has indicated these aspects in his work on 'Endocrine Glands and Body Adjustments'.... He writes that — until the recent past, the effects of hormonal secretions were considered to be more intense on the body and only partially associated with mental conditions. However, now these convictions have changed and we have to accept their dominance over the mental activities too.

In his book entitled 'Machinery Of The Body', J. Carlson has highlighted, besides the gross effects on sexual desire and reproductive potency, the effects of hormones on the psychological compatibility of married couples. He further writes that the inherent mentality of a child is also based on his hormones. Heredity and genetically connections are actively being researched these days at molecular levels. A natural question arises here as — "What is the original source of exhilaration or suppression of the specificity of a gene or a pool of genes?". In-depth investigations on such issues would show that it is the regulatory machinery of the hormones, which controls the transmission of inherent biological characteristics and behavioral tendencies from one generation to the other... and also gives originality to an individual.

Occurrences of phenotypes and tendencies that are different from immediate ancestors, are often attributed by the geneticists to the manifestations of the genotypes inherited from hundreds of generations ago... They tend to neglect the fact that the stimulation of specific hormone driven activity can bring drastic changes in any generation.

Professor Dorsap of the Endocrinology Department of the Chicago University has found the juicy secretions from the spleen as of utmost importance for proper functioning of the digestive system and the metabolic activities. He describes these secretions as regulators of the healthy functioning of the stomach and the intestine too. According to him, one's liking or disliking for different types of foods also depends on the spleenal secretions.

The Ductless Glands:

The 'magic' of the ductless glands has attracted researchers from all disciplines of biomedical and allied sciences. Major findings of the recent past are now well reported and some of these have also appeared in the textbooks. There are seven principal glands in the endocrine system; namely, Pituitary, Pineal, Thyroid, Parathyroid, Thymus, Spleen and Adrenal. Pancreas and Gonads are also included in this group of important hormone secreting glands.

The pineal gland — tiny like the tip of a pin is located in the brain. This is associated with mental and spiritual development. This gland is considered to be the junction between the external (gross) and the internal subtle domains of life. This center is also identified as the third eye or the sixth sense. Expert *yogis* connect their consciousness with the activities of the visible as well as the subtle world through the medium of this important center. This center is also regarded as the origin of rousing afflatus and as the source of receiving divine light and knowledge. Contact with extraterrestrial bodies, ghosts and divine spirits is believed to take place through this subtle communication center.

The pituitary gland also lies in the head right behind the root of the nose. Brilliance or sharpness of intellect, enthusiasm, sentiments of love and affection, power of self-restrain are generated and controlled by this gland. It also regulates the growth of body; dwarfism, or exceptional height are results of its malfunctioning. The diversion between manhood and womanhood also originates at this center. This tiny gland governs the transitions associated with puberty, youth and reproductive potentials too.

The thyroid gland is present inside the throat. It plays a major role in maintaining mental stability and development of one's nature.... Emotional level and development of character also largely depend on the functioning of this gland. The state of this center is responsible for inducing accidie or alacrity and enthusiasm. Slight over-stimulation of this gland makes one impatient, anxious, agitated or excited prat-

tler etc; one almost loses his senses in this condition. Harmonious activity of the thyroid gland supports development of talents and overall elevation of personality.

The parathyroid – a gland of the size of a grain of wheat – is closely associated with the neuronal system. In terms of mental and emotional effects, this gland contains the reservoir of courage to fight against injustice and immorality. It also arranges for the repair of damaged or sick cells, organization of ligaments and nerve fibers. It is a rich source of power for immunity and vitality.

The thymus gland lies in the upper central part of the chest. This gland contains the power required for the growth and development of the embryo. If this gland is underdeveloped or functionally disordered then the foetus will not receive proper nourishment even from a healthy mother. This is the principal gland that governs the normal development of an infant through the successive stages from childhood up to teenage and youth. In short, this is a regulator of the growth and healthy development of the body.

The spleen is the largest gland in the endocrine system. Metabolic activities, power of the digestive system and the purity of blood mainly depend on this gland — located in back side of the spleen. It also plays a major role in the activities of the nervous system. This gland has special connection with the solar plexus and the subtle body and is therefore considered to be responsible for transmitting the effects of cosmic activity to the body and mind.

The adrenal gland located right above the kidneys is also called supra- renal gland. Its shape and size resemble that of a large seed of a kidney been. Many of the natural tendencies and biological characteristics of male and female genders are developed through the specific secretive activities of this source. This center is also called the second brain. It triggers inspirations for taking courageous steps and appropriate actions in the situations of severe difficulties and crisis; valor, or cowardice are the results of different types of functions of this gland. The occurrences of 'change of sex' are often

triggered by some disorderly variations in the hormonal secretions from this gland.

Gonads — the reproductive glands, regulate the activities of the genital organs and reproductive potentials. The sexual strength and related youthfulness and the reproductive capacity of an individual depend upon the secretion from these glands. It is a common observation that in the old age, all the sense organs are gradually weakened and the body loses physical strength. However, sometimes people nearing hundred or more years in age are found producing children like the young ones. Such unnatural and surprising events result because of the strong and healthy functioning of the gonads in those old persons.

The progress of research on the endocrine glands is still in its infancy. The knowledge obtained by modern scientists on hormonal secretions is far from being complete. Still, whatever has been observed and analyzed so far is quite encouraging. Physiologists are surprised to find that the negligible amounts of hormones secreted by these glands are indeed the principal regulators of enormous functions of the body and the mind.

The physical health of brain, heart, spinal cord, kidneys, liver, stomach, intestines and other organs is commonly regarded as the basis of total health; causes of diseases (if any) are also searched in connection with the possibly sick states of these organs. Hematological tests are performed to identify the presence of germs and viral infections. Pathological tests of stools, unripe, saliva etc are also used as indicators of the internal state of the body and treatments are offered to rectify or remove the disorders or infections found through such investigations. However, ever since the remarkable role of hormonal secretion has come into light, it has become clear that the states and functions of different organs and the cellular and molecular systems are only the 'leafs' and 'branches' of the 'tree' of human body. Its 'root' lies deep in the core of the endocrine system.

There are many examples where poor people who hardly eat any fatty substances are found to be very bulky; the fat or overweight of many people does not reduce despite leaving the use of potato, rice, sugar and fatty eatables.... Such observations indicate that obesity or weight of the body does not directly depend on the type of food. Similar facts are seen in case of the condition of individual organs and subsystems of the body. Even when the structure and physical health of the brain is normal, one's mind might become sick or over-excited or his power of thinking might turn illusive, unreasonable or insane... In such situations, treatment of the gross components of brain would not serve any purpose. Because, the organs function like 'puppets' under the regulatory control of the endocrine system... The latter is mainly responsible for efficient or defective functioning of the otherwise healthy faculties of the body and mind.

In spite of significant progress in the medical sciences, diagnosis and care of a disease is largely found to involve some guesswork on part of the physicians. Even in the case of minor diseases or complaints, sometime the patients have to step the doors of several doctors, one after the other, throughout the life. They do not get much relief even after using all medicines ever recommended against that particular problem and thus spending lot of time and money in several hospitals and dispensaries. Very often it is seen that because of wrong diagnosis or incomplete treatment many patients do not get cured by any therapy; they try Allopathy, Homeopathy, Ayurveda, Naturopathy etc. but in vain... although, all these 'pathies' have their own scientific basis and their experts feel confident about curing these patients. Many a times the patients' troubles are found to remain more or less same even if they undergo best available and recognized modes of treatment. Those who get cured by fluke after a long phase of astray and misleading diagnosis and varied treatments seem to have received most of the positive effects from the internal struggle and latent activities of their subtle body too.

The stoutness, alacrity, beauty, extraordinary potentials of different sense organs, resistively and vitality etc, are no longer attributed to the physical strength and functions of the body. Instead, the specific

hormonal secretions are given most of the credit for such manifestations. The same is true in case of mental faculties too. If the dormant state of intellect, hasty or illusive mentality, etc do not change in spite of best psychological and medical treatments and sincere efforts of the persons concerned, the imbalance of associated hormonal secretions is identified as the major cause of such deficiencies. On the other extreme, sharp memory, bright intellect, sound reasoning, foresightedness etc are also considered as the gifts of perfect order and efficiency of specific hormonal activities.

Moving a step ahead from the level of body and mind, we find the deeper and altogether different aspects of personality reflected in the nature and character of a human being. These belong to the domain of convictions and emotions and thus bear upon spirituality too. The latent power of hormonal secretions seems to be associated even with the status of the inner self, expressed in internal tendencies and deep emotions. A natural question arises here as— "could morality and high ideals of life also be governed by hormonal reactions?" Then what is the use of *swadhyāya* and *satsang* etc. in the development of personality? If the endocrine glands in some way are the principal regulators of the integrity of character and emotional purity then we ought to review the present understanding of the methods of refinement and sublimation of internal character and research deeper on the subtle activities of consciousness.'

In this context, it would be appropriate to consider the ancient Indian science of the *ṣaṭ cakras*. These six subtle centers of etheric energy, located in different plexuses along the spinal column, are junctions which link the human consciousness with the latent currents of conscious power existing in the cosmos and thereby affect the activities of their functional counterparts — the endocrine glands. The *Sādhanās* of *Kuṇḍalinī Jāgraṇa* involve penetration and stimulation of the *ṣaṭ cakras* in an orderly pace. The effects of associated processing within the body may be understood in gross scientific terminology if we consider the eternal connection of the *ṣaṭ cakras* with the endocrine glands. This approach would explain how the

spiritual *sādhanās* are useful in regulating all aspects of personality development and opening the paths of all round progress and elevation in a natural way. Most of us may want to understand how the awakening of the *ṣaṭ cakras* and corresponding control and refinement of the functions of the endocrine glands could be accomplished by spiritual *sādhanās*? We will have to search deeper into the scriptures on *yoga* and study the subliminal effects of practicing the *ṣaṭ cakra sādhanā*.

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15 Control and Refinement of Hormones

At a superficial level, it appears that some chemical processing of the food intakes generates blood, and that the flow of blood is the source of heat and energy in the body. However, deeper analysis has shown that there is a separate mechanism at the root of all functions inside the body, which gives rise to the formation of blood and maintenance of body-energy. The autoregulatory system of the neurons and the influence of the conscious and unconscious mind on it are also now regarded as a manifestation of some subtler processes. The hormone secreting endocrine glands constitute this subtle system which is now found to be the basic controller of all functions, qualities, abilities or disabilities of the bodily and mental functions.

The thyroid gland secrets a hormone called thyroxin, which enters the blood stream and reaches different parts of the body. Deficiency of this hormone reduces the absorption rate of oxygen, which often results in disruption of metabolic functions, excessive fatigue, loss of memory and bluntness of mind. Also, the skin and hair become dry, lips and eyelids become lose and appear as pulled downwards. The body fattens and its plumpness is such that pressing a finger makes a groove (depression) in the swollen part. One is unable to bear chill and feels tired because of the reduced level of this hormone. Growth of the thyroid gland results in a swollen, protuberant throat and gives rise to the diseases like goiter. The reasons for abnormal shrinkage or growth of this gland are not fully understood. It may malfunction even if one's diet is balanced and the daily routine is also maintained at a level, which is normally prescribed for a healthy person...

So far, the deficiency of iodine in food is found to be a major cause of disturbing the normal functioning of the thyroid gland. The doctors recommend that the daily meals should contain at least 20 micrograms of iodine. Seawater, natural salt, sea grass and fishes are rich in iodine contents. However, in many cases even the desired intake of iodine and iodine based medicines do not help control the abnormal functioning of this red colored, butterfly shaped tiny gland whose two 'wings' in leaf shaped structures cover the upper end of the

respiratory canal. The discovery of a yellow protein colloid in the deep core of this gland had raised hopes that this colloid might be the source of thyroxin secretion. Further research annulled this possibility.

Experiments on controlling the deficiencies of thyroxin by injecting the extract of thyroid of other animals have not been successful because of lack of bio-compatibility. Drs. E. C. Kendall, Harrington and Berger of Britain had synthesized thyroxin in the laboratory by taking appropriate combination of carbon, hydrogen, oxygen, nitrogen and iodine. Although this artificial substance resembles thyroxin in chemical structure, its injection in the patient' body could not substitute for the deficiency of the latter. Use of iodized salt is regarded as a preventive measure; however it has not been successful in permanent prevention of the thyroid related problems.

Excessive secretion of this hormone also causes a variety of problems: the 'engine' — source of energy of the body gets 'over-charged' and, as a result, different metabolic and biochemical reactions and physiological functions are accelerated untimely. This often gives rise to increase in pulse rate, professed perspiration, high blood pressure, excitation, hypersensitivity, mental restlessness and irritation etc. Throat swallows due to which the neck also fattens. At present, radium based X-ray therapy and radioactive iodine, calcium etc are being experimented as the possible remedies against an over-active thyroid gland.

From the medical experts like Dr. Eimley to the chemical scientists like Dr. Collins of Canada, efforts of many researchers have been dedicated since long time to finding methods of controlling the thyroid gland. Role of the tiny parathyroid glands in influencing the thyroid functions has also been investigated in several laboratories. However, the secrets of these glands still remain unfolded — hidden behind iron curtains.

The chemical processing of extraction of energy from the food constituents begins as soon as it reaches in the stomach. Starch and

sugar are converted into glucose. Part of this glucose goes in the blood stream and helps energize the body and maintain temperature.... The remaining quantity of glucose is stored in the liver in the form of glycogen, making a stock for future energy-requirements. In diabetic patients, the sugar level in the blood increases and the corresponding shortage of energy supplied by glucose gradually weakens the body. This disorder in blood sugar arises due to the deficiency of insulin — a hormone secreted by the pancreas. Dr. Fredrick Vytating had done remarkable work on this hormone, which was earlier known as 'igelitine'. He and Dr. Mac Lloyd had received the Nobel Prize for their research work on insulin.

In healthy blood, the normal level of sugar is about one sixtieth ounce per liter. This small amount is the fuel (source of energy) that keeps the cellular and muscular machinery warm and active. Insulin along with another hormone adrenaline helps regulate this function.

Growth of the body is maintained by the pineal gland in the brain. Drastic changes in one's growth — especially of height, are caused by the disorderly functioning of this small 'dot' sized endocrine gland. Dr. Harve Cusching, a surgeon at the Harvard University medical school had removed the pineal gland of a puppy in an experiment. The growth of this dog had stopped after this operation and it remained a puppy there after... In some other experiments of this kind, the growth of some young rats was arrested since their pineal glands were cut out. In spite of being fed with ideal nutritious diet in controlled conditions, these rats neither grew in size nor gained any weight. They appeared like baby rats throughout their lives. In another case, surgeon Philip Smith had fixed the pineal gland of one rat into the brain of another normal rat. The latter, because of two such glands, grew at exceptionally fast rate and became a giant—almost three times bigger than the normal rats, ever found in that family of rats.

Imbalance of the endocrine glands creates amazing disorders in natural living system. The pair of a 25 inches 'tall' man, Tomthumb and a 24-inched lady, Lebonia is counted among the great wonders of nature in the human society. However, the experts know that such

wonders are results of slight disorders in the endocrine system. Tomthumb weighed 9 pounds 2 ounce at the time of birth; but, due to some deficiency in hormonal secretions, his body-weight remained the same. His body had become a source of earning for him through jugglery. He had married a matching dwarf woman and enhanced his business through their joint shows, The other extreme of hormonal imbalance leads to uncontrolled growth of height and/or weight. Robert Widelio's height of 8 ft 11 inches was a live example of this effect. He used to look like a moving Palm Tree. A 7 ft tall man Tilwar lives like a 'show piece' for the people of Palamou in Bihar (India).

Czar Peter of Russia was very tall. He used to like tall people. When one of his favorite, exceptionally tall Sargent died, the Czar had ordered to preserve his skeleton in the Kuntzkare museum. This specimen was about 200 years old when some scientists tried to investigate the cause of its abnormal height with the help of X-rays. The analysis carried out by them identified excessive secretions through the pituitary gland as the cause of this exceptional growth.....

Alipus of Alexandria was a dwarf. His height was only 17 inches. Amira Jembilakas had kept him in his house to entertain the visitors. He used to carry Alipus in a small cage while travelling. Fanny Miles, a girl born in 1880 in Cincinnati, Ohio USA, had exceptionally long feet in her otherwise normal body. Her 2-ft long feet used to frighten people. Nobody married her because of this abnormality.

Alfred Lenzvan of Detramat, Michigan (USA) had a peculiar ability to breath through the eyes instead of the nostrils. During test experiments he used to quench candles by staring at them while his nose and mouth were covered. Fed Patgel's voice was so loud that it could be heard from a distance of over 3 miles whenever he spoke at high pitch with force.

The above examples present a small sample of the varieties of abnormalities in the body-functions that could be caused by the imbalance in the endocrine secretions.

Renowned psychoanalyst, Dr. Edgar has conducted research on effects of hormones on behavior and attitude. His results indicate that many individuals, despite having excellent physique and charming appearance, do not have the natural masculine (or feminine) tendencies because of the abnormal levels of certain hormones. Impotency is also attributed to hormonal disorders in general.

Many physically weak persons have gained repute in diverse fields of sports, arts, literature, sciences, etc. Dwarf men and women have become popular actors.... The jugglery of hormones can also be seen making some poor ones — who might have never eaten a full meal, as hefty and stout. On the contrary, in some other cases, in spite of having lavish and nutritionally rich and healthy diet and best efforts in terms of physical exercises, the weak and bony bodies of many people show no signs of improvement due to persistent hormonal deficiencies.

The importance of hormones in regulating the defense mechanism of the immune system in the body is well known. Whenever the germs and viruses or any substance, which is 'foreign' or 'toxic' to its normal functioning, invades the body, some of the hormones secreted by the endocrine glands react instantaneously. These stimulate the B-cells in the blood to recognize the antigens and harmful microphages and produce specific antibodies to eliminate the invaders. The hormones also participate in the struggle of the body to fight the infections/diseases during this defensive activity. This struggle of hormones induces psychological effects that are manifested as — restlessness, irritation, anger and anguish in the diseased persons.

As stated earlier, the endocrine glands are affected by internal state of the mind and emotions and accordingly generate the feelings of joy, enthusiasm, courage and alacrity, or that of dole, dullness, despair and apprehension etc. Modern scientists are actively engaged in finding hormone-based therapies to control one's physical and mental health. Partial success has been gained in the cases where major cause of hormonal imbalance is identified as deficiency of cer-

tain chemicals as a result of some disease or known physiological disorder....'

Scientific investigations have revealed that hormonal secretions do not have any direct relationship with the quantity and quality of the food intakes and physical activities in general. Neither the geneticists have been able to establish any correlation between driven functions and hormonal regulation, nor any psychological study has yet confirmed any correlation model between specific functions of the endocrine system and the state of the conscious mind, which could be regarded as a universal model. Possibilities of some inherent tendencies of the subconscious and unconscious mind influencing the hormonal secretions do not find ground because of the lack of coherence. Then a natural question arises — what is the reason of variation in the levels and types of hormonal secretions from the endocrine glands? We will have to look into the deeper depths of the subtle levels of human consciousness in order to find possible answers....

A human being is an ensemble of three systems: one is physical — made up of *panca tatvas*, which is known as the physical or the gross body. Food, atmosphere and physical activities affect this system. Disorder or malfunctioning of this system is treated with the help of medicines and external devices.

The other component of a human is the subtle body consisting of the conscious and the unconscious faculties of mind. Thoughts and intellectual levels of environment influence this system. Logical analysis, thought provoking discussions and studies, training of discreet planning and decision making, etc are used as the means for healthy development of this body. Intoxication and steroids affect the brain-functions and thereby exert an effect on the system of the subtle body also to some extent. Ambiance of life, quality of work, mental tasks, habits and deeds affect and are affected by the status of this system. Epistemology, Psychology, Parapsychology and allied branches of neuroscience and philosophy of mind deal with orderly maintenance and refinement of this subtle component of a human being.

The third and the innermost component of human consciousness is the astral body which is also known as — the causal body, the eternal emotional core of the heart, the inner self, the abode of soul, etc. The natural beliefs, faith, inner emotions, intrinsic instincts and desires, and ascetic appetence etc emanate from this center. The feeling of ego, haecceity and afflatus also have their roots in this innermost core of human consciousness. The inherent characteristics — the reflections of the sins (*pāpa*) and the virtuous, pious, altruist deeds (*puṇya*) of an individual are manifested in these expressions of the inner self. The intrinsic state, purity and spiritual level of these reflections are found to affect the activities of the endocrine system. Thus, the hormonal secretions appear to be subtly controlled by the *prārabdha* — destiny formed according to the collection of the *pāpa* and *puṇya* of the previous births. Reactions of the *pāpa* and *puṇya* of the present birth also get accumulated in the stock of *prārabdha* and play an important role in respectively deteriorating and ameliorating the order and efficiency of the endocrine system and thereby influencing the physical and subtle bodies too.

The treatment of the disorder or abnormalities in hormonal secretions would be most effective if it is focused at refining and arousing the subliminal causal body. One can regulate the hormonal levels in a desired manner by purifying the intrinsic characteristics (*sanskārs*) of the inner self and controlling the emotions, faiths and aspirations assimilated in its core. This cannot be achieved by gross level treatments based on nutritious diets, physical exercises and medicines etc. Intellectual activities and creative methods of mental elevation are also ineffective in reaching the causal body. The endeavors (*sādhanā*) of spiritual refinement appear to be the only solutions. Ascetic practices of these *sādhanās* offer multiple benefits of regulating the endocrine system and thus helping — harmonious functioning of the physical body, avoiding hormone driven disturbances in mental fluctuations and creating enchanting effects on the subtle and causal bodies. These *sādhanās* have the potential to culminate the individual self up to the divine heights....

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16 Esoteric Role Of The Pineal Gland

The mystic functions of the unconscious mind, aura of one's vital energy and inner strength do not depend on the condition and activities of the gross body. The same is true of the functioning on the endocrine systems and hence of the transmission of the hereditary (genetic) information, the development of an embryo and the enormous potentials of the cells too. Thorough research in anatomy and physiology of human body has been able to provide only partial information about some of these aspects. Such specificity, which can not be explained in terms of the in-vivo biochemical reactions, is considered to be associated with the subtle and astral bodies.

Elucidation of the vast field of this deep knowledge and realization of the associated intrinsic properties and functions has been the focus of spiritual experiments (*sādhanā*) since the time of yore. Modern science too has begun to search for the subtle aspects of the above mentioned characteristics of human life.

Experts of neurochemistry consider the pineal and the pituitary glands to be the most important glands in the endocrine system. The hormones like androgen secreted by the pituitary gland are found to control not only the sex related activities but also the capability of decision making, soundness of thinking and space-time based perceptions of an individual. The savants of *yoga-vidyā* associate the pituitary gland with the topmost extrasensory center (*cakra*) of etheric energy — namely, the *sahastrāra cakra*. The consciousness of an individual, is described to be linked with the omnipresent supreme consciousness through the medium of *sahastrār*.

The pineal gland is considered to be the linkage between the body and the mind. Renowned French philosopher, Rene Descartes describes this gland as the connection between the *jaḍa* (material) components of the body and the *cetana* (conscious) powers of the mind. Divine consciousness inspires one's mind through this center.

Anatomically, the pineal gland happens to be the smallest functional component of human body. This tiny gland is conical in shape like a granule of gram; it is about 0.25 inch long and weighs around 100 mg. This gland is located between the cerebellum and thalamus and is connected with the upper layer of the third ventricle. Interestingly, this gland, which was until recently considered by the modern scientists as an unnecessary component in the human body and was attributed as a remnant of the early phase of evolution of the human body, has now become the major focus of front-line research on human brain.

Melatonine — a hormone secreted by the pineal gland is supposed to react with darkness and thereby maintain the circadian biorhythms which are associated with the cyclic transitions of day and night.... It is also found that this hormone affects the activities of the neurons, which participate in controlling the process of sleeping. Sensitivity to light appears to be its main property that has been tested in several laboratories. This property is remarkably consonant with the linkage between the pineal gland and the *āgyā cakra* (third eye) as described in the scriptures on *yoga sādhanā*. A Greek Physiologist, Herophibas had described (some time in 400 BC) this gland as the center of restraining power which controls the flow of thoughts. Seers of esoteric knowledge have also found it as the center of origin and source of orderly éxpression of discerning intelligence. Modern scholars too consider it as a center of divine potentials.

The size of the pineal gland is bigger in children as compared to that in the adults. Among adults, women — who are in general, emotionally more sensitive than men, are found to have bigger pineal glands than that of man. Sir Alaxender Kennan had presented the essence of his research in the dissertation entitled 'The Power Within'. He writes that the pineal gland of compassionate and spiritually elevated personalities is usually more developed and bigger....

Every human is free from the entangling thraldoms of ego, selfishness and worldly affairs in the childhood. Very few people enjoy the same purity of inner self, fairness, and truth of mind in the later phases of life. This is the reason why in most people the pineal gland shrinks

gradually as they cross he edges of childhood. One's emotional level has great impact on the development and activities of this gland.

Dr. Crookshak's research work has made significant contribution in identifying the effects of the endocrine glands on physiology and psychology. He calls these as 'magical glands'. In his view, the physical and mental health of an individual and his inherent tendencies could be assessed in terms of the level and pattern of hormonal secretions in his endocrine system.

The pineal and pituitary glands are termed as the master glands because of their predominant role in the endocrine system. The functions of pineal gland were partly recognized by the medical scientists as long ago as 400 BC; the Greek thinker Herophibas, who was known at that time for his analysis of some physiological functions, had also expressed views on the role of this gland....; however, in the absence of visible identification of this gland, his views had raised controversies. He had described this gland as the regulator of the thought process. For him, this gland was like a link between the physiological and mental functions.

Dr. H.W. Graft and Dr. E. Waldvene Spensor — both micro anatomists, had carried out research on the pineal gland in the late 19th century. Their results showed that this gland responds to the optical signals (light) received directly from the surroundings or transmitted through the nervous system as perceived by the eyes. This finding resembles with the interpretations of the third eye described in the *yoga* scriptures. Major results of the modern research on the pineal gland concern the extraction and analysis of the hormones, melatonine and serotonine secreted by this gland. These have elucidated some latent features of the gross body, which were unknown until recently.

Around the middle of this century, in 1958, Dr. Morton B. Learner of the Yale medical school had extracted melatonine from the secretions of the pineal gland. This hormone is found to be responsible for photo-reactive effects of change in the skin color of frogs and fishes. In humans, it is considered to regulate emotional changes and

excitations generated by fear and anger... The secretions of this hormone plays very important role in puberty during the commencement of teenage... As the child passes through this transition period, the size of the pineal reduces gradually and the charge of controlling the sex related hormonal secretions is transferred to the pituitary gland.

As stated earlier, the master gland — pineal is considered to be directly connected with the *āgyā cakra* (third eye). Awakening of *āgyā cakra* results in rousing *viveka* — prudence, discreet intelligence, righteous thinking and divine insight. If a person channelizes his creative talents and virtuous potentials with the support of *viveka* then he can reach up to the diamonds and pearls of the hidden treasures of the unconscious mind.

Awakened *āgyācakra* purifies and illuminates the *mana, buddhi, chitta,* and *ahaṁkār*. This is a fundamental step in the *sādhanā* of *manomaya kośa*. The mention in *Purāṇas* of — "the burning of *Kāmadeva* because of the opening of the third eye of Lord Shiva..." —is an allegoric representation. It implies that opening (activation) of the subtle center of the pineal gland controls the erogenous secretions from the pituitary and thus restrains stimulation of the genitals. It also implies that the agile giant of mind can be restrained and refined by the *sādhanās* of opening of the *āgyācakra* and the consequent spark of *viveka*.
Refinement of the power of this center and the inter-linked functional units of the master glands of the endocrine system opens up the ways of sublime transformation.... The vast difference between the wretched (vile) and the elevated (elite) levels of personalities arise respectively from the underdeveloped or waned and the actively refined states of this center. This is because the activities of this center shape the mental status, attitude and flow of thoughts of a person, which in turn govern his deeds.

Renowned psychiatrist Dr. Daniel Kreman has separated another hormone from the brain tissues. This hormone named serotonine is densely present in the pineal gland and the junction cells. The pineal

gland is a reservoir of serotonine, which is distributed by the junction cells to the other parts of the body. Further research work has shown that serotonine is an elementary form of melatonine and that its richness activates reasoned thought process.... Another significant result was that the atomic structure of serotonine matches with that of LSD-25 (Lisurgic Acid Diethylamide) — a narcotic drug, which is prepared by the extractions from a grass called rai.

Small amount of LSD induces intense intoxicating effects on the conscious mind. The hippies consume it for what they consider a 'spiritual joy'.... The medical experts on the other hand, advice against its use because this drug can neutralize the activation of serotonine. The so-called feeling of attainment of higher levels of consciousness by consuming LSD is an artificial and illusive state of mind; because, the suppression by LSD of the activities of serotonine blocks the natural flow of thoughts and one feels 'thoughtless' as if one is in a state of trance.... This chemically induced suppression of brain-functions is risky as it prevents the natural hormonal processing and thereby destroys the harmony between the brain (mind) and the body....

The pineal gland is considered to be the gross center for the manifestation of consciousness that regulates the cycle of the biochemical activities in an individual. The spiritual level of one's consciousness has a direct impact on the regulatory activities of the pineal and pituitary glands — especially on their roles in inducing and controlling the emotional and physical functions associated with sex. The greater the natural control of pineal on pituitary and the collective control of both on the genitals, the more becomes possibility of — awakening of the otherwise dormant centers of consciousness inside the body and the corresponding rise in one's spiritual potentials to attain sublime levels of *cetanā*.

Appropriation of the serotonine concentration and naturally harmonious control over its activity is a challenging task, which is essential for spiritual achievements. The excessive level of serotonine triggered by erogenous thoughts in the individuals transpires the vicious cycle of mutually supporting activities driven by concupiscence and

related endocrine secretions... and leads to fast decline in the possibilities of spiritual evolution. The *yoga* is a systematic method for focused awakening of the pineal gland followed by natural control over the entire endocrine system.

Every human being is bound within the world created by his own emotions, thoughts and deeds. His character is the creation of his internal world too. It is in his own hands to come out of the barriers which block the empowerment and sublimation of his consciousness — reflected in the functions of his brain and body.
The *sādhanā* of opening of the *āgyācakra* have direct positive impact on the pineal gland and hence on the endocrine system too. The success of these *sādhanās* arouses one's *viveka* and induces elevated flow of his *prāṇa*..... The life histories of great personalities across the world show that they were empowered by the internal energy of the *cetan* and they had used their talents for higher ideals with the help of their radiant *viveka*. As a result, their lives were endowed with such accomplishments that can be compared with divine boons....

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17 The Subtle Effects Of The Pituitary Gland

The external appearance or physique of the people varies from one geographical region to another because of the climatic changes..... However, the anatomy, physiology, and internal chemistry of the body is the same in all human beings.

The chemistry of human body is so systematic and competent that it can maintain the healthy functioning of the body in natural atmosphere just with the help of the regular intakes of air, water and food.... The harmonious functioning of the biochemical reactions within the body can easily defend it against the attack of germs, viruses and primary diseases. It automatically maintains the health of the body in case of minor injuries, pains and distress etc. This perfect system is disturbed because of external imbalances — caused by pollution, uncontrolled diet, artificial, and stressful mode of living.

Brain is considered to be the reservoir of conscious powers and the source of all intellectual faculties. Its neuronal network regulates all the physical, biochemical and mental functions in the body. According to the modern medical sciences, the endocrine system appears to be the principal linkage for manifestation of the 'cosmic' conscious energy in various brain-regulated activities......

Recent research has shown that the psychology of an individual has an intimate two folded relationship with the hormone secreting functions of the endocrine glands. Adept investigations in neurochemistry and psychology carried out in the past few decades have shown that the root cause of a large number of diseases lies in the emotional complexities. Healthy development of mind and soothing conditions of thoughts and emotions upkeep the healthy functioning of the endocrine system and eventually a balanced secretion of neurotransmitters hormones supports happy and creative conditioning of the mind and healthy functioning of the body.

In view of the predominant role of the endocrine system, the latter has been the focus of some important and active areas of brain-

research. The pituitary and pineal glands are said to be the conductor glands or the master glands as their secretions directly or indirectly affect the functioning of the other glands in the endocrine system.

The pituitary plays a fundamental role in the reproductive potentials of individuals. The hormones, androgen and estrogen secreted from here give rise to the masculine and feminine characteristics respectively. Dr. N. Shale's medical research has shown that this gland is also prominent in protecting the health and orderly functioning of the body. Its regulatory mechanism weakens at the times of emotional perplexity or severe mental disturbance.... Persistence of such stressful conditions often results in the occurrence of muscular spasm, skin aberrations, indigestion, constipation, colitis, hypertension, cardiac disorders, etc. Any violation in emotional or mental peace perturbs the harmony of the brain-functions — including the endocrine secretions which in turn disturb the healthy functioning at the physiological, bio-electrical and biochemical levels and results in the above kinds of diseases and disorders.

It is said that the root of all diseases lies in the malice of one's thoughts and emotions — including the negative feelings and tendencies of jealousy, fury, fraudulence, unchaste, hypocrisy, excessive ambitions,.... etc, are like slow poisons which weaken one's mental and physical strength day by day....

The early trends of modern psychology had propagated amorous sentiments and fulfillment of concupiscence as an inductive force, which is responsible for inspiring the development of cheerful, adventurous, brave and courageous character. It was also affirmed that the suppression of emotions and sensual desires might result in the abjection of personality into a coward, confused, apathetic, disgraceful, criminal and sarcastic one. The psychologists like Freud also attributed improper development or complexities of one's character, to the abnormalities in his sexual life. However, new principles of human psychology based on deeper understanding of the neural and mental sciences now convey that — it is mainly the state of the en-

docrine system which governs different functions at the physiological and psychological levels.

The hormonal secretions of the pituitary gland are found to govern the sexual characteristics and activities of an individual. Impotency and fertility are not associated so much with the genitals, as with the secretions of specific hormones from this gland. The manifestation of masculine characters in a female and feminine signs in a male and eventual change in one's sex are found to be caused by transformation or disorder in the hormonal functions of this gland.

Neurohormonal research has identified about nine principal hormones secreted by the pituitary gland. Mother's natural affection towards her child is also attributed to the effects of such hormones. Stability and decisiveness of mind is found to depend on the secretions of these hormones. The endocrinologists attributed the steady inactivation of the pituitary gland as the major cause of drastic transformation of Napoleon Bonapart's personality.

Physiologists describe two part of this master gland. Augmentation of the alpha cells of the first part — anterior pituitary is found to inspire manly characteristics of courage and firmness. A person having excess of these cells will also have excellent power of self-restrain and self-discipline. Such an individual is usually endowed with impressive personality, industriousness, self-confidence and determination. Such people often become successful leaders. Glorious personality of Abraham Lincoln is a renowned example of the marvelous effects of the growth of alpha cells in the anterior part of the pituitary.

Increase in the basophilic cells of the anterior pituitary gives rise to feminine characteristics like emotional sensitivity and compassion. People having excess of these cells are generally short and have unstable nature; they show symptoms of psychlothemia — fluctuating temperaments; sometimes they are over-enthusiastic but soon become indifferent or too depressed without any apparent reason....

Such persons are often inclined towards art, poesy and music. Fredrick Chopin is reported as having these characteristics in the 'Encyclopedia of Esoteric Men' — unique treatise on peculiarities of human character compiled by Benjamin Walker.

Some hormones secreted from the frontal part of the pituitary govern the reactions of thyroxin which is the principal hormone secreted by the thyroid gland and which is essential for metabolic activities and processing of cardiac functions at a normal pace. A hormone called oxytosine is secreted from the back (posterior) side of the pituitary gland in the mothers of newborns. This hormone stimulates the production and secretion of milk from the mother's breasts.

Dr. Altschule, an eminent biochemist at the Harvard University observes that — if there is any biochemical basis of bliss, it must be through the pituitary and pineal glands. It is at these sources where all the biochemicals (hormones) are produced, which induce the soothing feelings of cheerfulness and enthusiasm.

In normal cases, complete development of sexual organs and activation of erogenous sensations takes place during the age of 14 to 16 years. The desires and potentials of indulgence in sexual activities usually diminish by the age of 60 years. Men loose the desire of carnal pleasure and their organs weaken for such activities by this age. Women reach this state even earlier around the age of 50 years, after menopause. However, the perturbation of the normal activities of pituitary sometimes results in amazing abnormalities of both kinds. For instance, Dr. Guilline has mentioned of the case of a seven years old boy whose sexual development was equivalent to that of a normal young man. Hypocrites had also cited some such abnormalities and attempted analyzing their causes ages ago. The following examples reported during past hundred years or so add to this series.

Charles Worth, born in England on 14 March 1829 had become a complete young man at the age of just 4 years. He also grew old fast and passed away at the age of seven. Sudan's 9year old mother was in news some years ago. Her husband too was a child of age 10

only when they got their first baby. On 8th January 1910, an 8 years old Chinese girl gave birth to a child. There lived another peculiar couple in the Kalawar region of Africa where the custom of child marriages is still popular; the couple was blessed by a baby girl when the husband was 17 years old and the wife was only 8. Surprisingly, their daughter too got married in the childhood and became a mother at the age of 9 years.

Other extremity of sex related abnormalities are manifested in people possessing concupiscence and reproductive abilities like those of the youths. Jora Aaga of Turkey was 153 years old in 1927 when he married his eleventh wife. Before that he had witnessed the deaths of his ten wives and twenty seven children.. He had over seventy children from his eleven wives. John Milkey of Agaster-Mize survived a healthy life of 124 years. Few years before his death, John's gray hair had begun to turn black... He was married last at the age of 80 to a young woman of 18 years. He had ten children from this wife all of whom were healthy and lived longer than an average inhabitant in that area.

Hormonal secretions in women are found to be very compatible and conspicuous to provide extra energy and strength during and after the menstrual cycles, pregnancy and delivery... Their hormones seem to be more supportive in increasing their resistance and vitality as compared to the men. This is the reason why despite working for the entire day, every day — all her life, a woman, on an average, lives longer than a man. According to a census of China about 86 persons of age 100 years or more were living in the Dumei region on the banks of Yangtse several years ago; of these 69where women and 17 men. Seventy-eight of these 'long-lived' people had been residing in small villages and only eight had spent most of their life in densely populated towns... The oldest in this group was a 116 years old lady who was still living independently in her own cottage in a farm at the outskirts of the village.

The relation of hormones with longevity is another major topic of active research concerning the pituitary and other endocrine glands.

Experiments are also on to counter the hormonal deficiencies by injecting the corresponding hormones from certain animals into the patient's blood. However, bio-compatibility and non-sustainability of the positive effects if any has been the major bottleneck in their success. Similar problems are sometimes faced with the use of tranquilizers and other medicines. The negative reaction of a drug and chemicals occurs because of their recognition as foreign or incompatible bodies during the 'scrutiny' by the neuroreceptors.

The neuroreceptors, neurotransmitters and hormones play the principal role in regulating the biochemical information processing within the body. Recent investigations of these include experiments on the synaptic connectivity and activity of the neurons by electrochemical stimulants to influence the autoregulatory activation at biochemical levels. However, thorough understanding of the endocrine system and possibilities of controlling hormonal secretions and functions are still far from the reach of current developments.

Discoveries of different hormones and decipheration of the structure and chemical function of the hormone and neurochemicals like encephalines and endorphins are remarkable achievements of brain-research. These findings would contribute to the fields of research on healthy development of brain and to the medical treatment of neurological and psychological disorders.

More significantly, advancement of research has helped understanding the internal structure of brain and the chemistry of the endocrine system and it has shown that the complexities of neurochemical and endocrine reactions have connection with the subtle aspects of personality. It has become clear that as far as the transformation of one's mentality, nature, emotional character, intrinsic values etc. is concerned, nothing viable could be achieved by external treatments — be those electrical impulses or medicines... Because, it is the mental and emotional state of an individual which is dominant in affecting the normal functions of the endocrine system and hence of the neuronal network.

In view of the subtle effects, many researchers have now focused their studies on applications of meditation (*dhyāna*), contemplation (*manana*) and other spiritual *yoga- sādhanas* to improve the health of body and mind. These practices are expected to help refine the inner potentials of one's consciousness so that the neuro-hormonal secretions would be naturally maintained in harmonious order...

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18 Growth Hormones and Change of Sex

The modes of living, nutrition, climatic conditions, etc do have significant effects on health. People who adopt a balanced diet, disciplined and creative life-style with appropriate physical exercises and mental activities enjoy good health in general. Those living an undernourished or stressful life and those used to over-eating and luxuries without work, on the other hand, have to encounter a variety of diseases.

In the modern medical system, the diagnosis of a disease is made with respect to — identification of possible invasion of germs and viruses, effects of seasonal variations, metabolic and physiological disorders or malfunctioning at the organ and molecular levels... etc. and the remedies are prescribed accordingly. However, many a times, a situation arises — for instance, in case of abrupt growth or reduction of an organ; change in some part of the body; change in voice; rapid loss or gain in weight; severe headaches; etc — where none of the symptoms, signs and diagnostic tests help proper inference. In such circumstances, the treatments are given almost on trial and error basis, which hardly eliminate the patient's trouble. The 'diseases' or disorders of this kind often arise due to perturbation in hormonal secretions and reactions.

Despite significant developments, in the present century, in the detailed understanding of the anatomy, physiology and biochemistry of human body, the brain functions — in general and the activities of the endocrine system — in particular, largely remain unknown till today. The complexities manifested by slight fluctuations in the hormonal secretion pose challenging problems before the doctors and biomedical scientists.

Unlike the other components of the body, the tiny glands of the endocrine system do not seem to have any visible role or direct application in the activities of body. They just secrete minute quantities of some chemicals (hormones) in the blood stream and otherwise remain quiet, inactive and unnoticed. But, as stated earlier, this 'apparently negligible' work of the endocrine system creates magical ef-

fects on the micro as well as the organ level functioning of the body. Even the psychological conditions and efficacy of mental faculties are significantly affected by these wonder glands.

Hormones have variety of effects on the body and mind. Most well known are those associated with puberty. Boys and girls look alike in the early childhood but for the difference in their appearance owing to different styles of hair-cuts and dressing. Major diversities in their physical and mental makeup begin to manifest by the age of eleven - twelve years in general.

Voice of a teenage boy becomes heavy; his delicate body starts hardening along with the growth in its physique; growth of hairs begins above the upper lip — signaling the appearance of mustaches... Girls of this age usually feel shy of facing opposite sex; some portions of their body protrude; their sentiments and desires begin to take new dimensions... Certain hormones secreted by the pineal and pituitary glands trigger these signs of puberty and associated biological and psychological developments.

Occurrence of specific hormonal secretions and consequent reactions are so perfectly scheduled in the bio-cycle as if an alarm of a clock or moment of explosion of a time -bomb is well set in advance. Particular hormones are secreted in specific amounts at the right moment in a healthy body. Little deviation in these activities may correspond to severe abnormalities. For instance, deficiency in the (sex) growth hormones would either lead to the underdevelopment of the sex organs or to impotency; no reproduction would then be possible.

Disorder in the proportion of the sex hormones in the body can result in abrupt manifestations in the gender-characteristics: there would be no hair on a man's chin and mustache while a woman subject to such hormonal disorder may have to shave her beard every day...! Hormonal imbalance also affects the specific tendencies of each sex — a woman could become harsh and adventurous like most men while a man could be seen showing womanly delicacy and shy be-

havior; the sexual desires of either sex might also transform accordingly.

Sometimes the imbalance of sex hormones is so significant that it even gives rise to change in the structure and function of the genitals... At times, we hear about the surgical operations of transforming a male into a female or conversely. Such operations become necessary in case of severe abnormalities in sexual tendencies and genital organs caused by certain hormonal disorders.... Surgical treatment enables the completion of this transformation at a rapid pace so that the patient could live a normal life with his/her new sex. There have been reports of people who have found compatible matches – – from the other sex, opposite to their new sex — and lived happy married life after such operations.

A goldsmith named Jiyalal was living in Solan district in western India when his third daughter Sunita was born. He and his wife were worried because they did not have any son.... When they noticed that Sunita's body had some masculine signs, they took her to a local hospital. The doctors found that Sunita's genitals were partly developed as that of a male and that the latter could be made functional by surgical operations. Jiyalal agreed for this experiment on his four years old daughter. A team of six doctors conducted this operation successfully. Sunita (now having a different name) is now a healthy and grownup son of his parents.

Seventeen years old Ranjana, a resident of village Hupari—located in the Hatkala Nagale town around 18 kilometers from Kolhapur had undergone an operation of sex transformation in the civil hospital of Kolhapur some time in April 1979. As she did not have any signs of menstrual cycle till the age of seventeen, her parents brought her to the specialists in this hospital. The doctors found abnormal signs of male sex and the presence of some masculine sex hormones in her body, so they advised surgical treatments by which Ranjana could be converted into a complete boy.... Considering the risk to her healthy life in continuation of the present abnormalities, her parents, though unwillingly, gave consent... Thus, Ranjana became

Ranjeet and is now living a normal life like any other man...; there is no sign of feminine characters in her (his) mental tendencies either...

Ms. Jackson Kaubkowa of Czechoslovakia used to feel severe pain in the abdomen and stomach during her puberty period. Her breasts began to shrink instead of expanding — as in case of the other teen-age girls. Medical examination showed that her sex was gradually changing into that of a male. She then became a boy after a surgery.

According to a report published on March 12, 1979issue of Nai Duniya — a newspaper published from Indore (India), the doctors of the civil hospital in Shahadol were shocked to see a fully developed uterus in the body of Ramdin — a forty years old man who was undergoing a hernia- operation. The uterus was brought out by surgery and kept as a specimen in the museum of the medical college in Riva district, MP.

Internal desires and inclinations shape up one's mentality and character. These effects are sooner or later reflected in his/her behavior too. Psychological analysis shows that excessive attraction towards the opposite sex sometimes brings about corresponding changes in one's natural sentiments and tendencies. For example, if a woman is so fond of her lover that her mind all the time remains engrossed in his affection, his thoughts, the memories of his various activities....; her heart is totally devoted to his love..., then there would be a likelihood that after living with him in this state for substantially long time, the effects of his habits, characteristic behavior, sentiments, etc, would assimilate deeply in her subconscious mind to such an extent that she would even begin to behave like him....; in the long run, this might also affect her hormonal secretions so much that even her sexual functions would tend to become like those of her partner....

Similarly, excessive involvement of a man in a woman's company and amorous affection would orient his tendencies to resemble those of hers and gradually lead to the manifestations of induced feminine characteristics in his sexual functions too.

Many a times one is not satisfied with present life and strongly feels that circumstances and fortunes would have been better if he/she were born as a woman (man).... Prolonged effects of such earnest desires of the inner mind accumulate in the *citta* and are carried forward after death along with the soul... If one has a strong will-power and he/she endeavors to live like someone of the opposite sex in similar circumstances, then, because of the influence of the inner emotions on the endocrine glands, the transformation of one's sex could also materialize in the present body itself....

The assimilated effects of previous births are carried over up to the next birth.... The above kinds of men and women — even if saved from a transformation of sex in the present body, would be most likely born as women and men respectively in the next birth. The state of the eunuchs lies somewhat in between. Unless fully transmitted into the inner brain, the influence of opposite sex might induce such abnormalities in a person. It should be noted again that it is not the anatomical structure or physiological functions but the inner instincts that govern the basis of hormonal secretions and hence the consequent effects on the mind and body of an individual....

Unnatural attractions towards similar sex instead of the opposite sex is also said to have its roots in the transformation of one's internal sexual tendencies into that of the opposite sex. If the sexual character of two women is slowly changing — at the mental and emotional level, into that of men than they would both enjoy each others company more because of the mutual attraction between the complementary characters of the dual sexes present in both. The partly manly tendency of one would attract the woman in the other and the woman existing in the former will be sexually inclined towards the masculine features sprouting in the other. In the extreme case, indulgence in sexual activities with each other would give them more satisfaction than having sex with men in general.

Similar relationship exists between a couple of two men — both of whom are latently tending towards a sexual transformation. The partial transmutation into the opposite sex and associated abnor-

malities of unfulfilled concupiscence in natural copulation gives rise to homosexuality. The *saṁskārs* of previous lives may also incite such instincts in the individuals.

Until past few decades, lesbians or homosexuals used to have abnormal sexual relations secretly — fearing abhorrence from the society; but now, they have secured the validation of identity on grounds of human rights in several parts of the world. Recently, homosexual marriages have also received judicial recognition in some of the European countries.

Impotency is another kind of sexual abnormality often induced by psychological complexities. Treatment of impotency was earlier based on stimulating the patient's nerves by certain medicines. However, these effects used to be temporary like intoxication. Ever since the pertinent role of some hormones in governing the sexual developments has come in light, treatments by injecting the desired hormones into the blood stream through external means are frequently tried out. But, these too, do not ensure long-lasting effects; moreover, externally induced hormonal reactions risk other complexities of disrupting the natural endocrine activities of the patient. Surgical operations are also being tried out to replace the pineal or pituitary glands in the patient's brain...

As long ago as in 1879, seventy two years old Dr. Brown Sequard had declared the he has regained youth by inducing the secretions of the testicles of a dog into his own body. This had attracted many medical experts of that time; Dr. Brown's body responded positively to their tests; however, he could not sustain this induced youth for long and the sexual functions of his body returned to the old form in a matter of few days.

Dr. Murray of England had experimented on the effects of thyroxin externally injected into the patients' blood. Positive effects were recovered but could not be sustained. Thyroxin extracted from over 870 sheep was required to be injected in the blood of a woman almost every second day because she was suffering from severe

deficiency of this hormone due to the malfunctioning of her thyroid gland. In spite of best efforts, this technique could not prolong her life for more than few weeks. Experiments on transplanting the duct-less glands in some animals — including monkeys and dogs, have not been successful up to the expectations. Possibilities of those on the humans are still far from sight...

In case of major surgical operations, in general, someone else's blood — of compatible group is infused into the anemic patients. This blood suffices only for a limited period of few days and the patient sustains a healthy life provided the production and supply of his own blood regains at normal pace in the mean time. Transplantation of a gland also works successfully only if it is bio-compatible and begins to secrete hormones in complete harmony with the endocrine system. If the stimulation triggered by these hormones activates the natural functioning of the patient's own gland, he or she would enjoy a healthy life...; otherwise, the effects of the transplanted gland would last only for few days and fail without any net positive effect. The endocrine gland transplantation operations have not been successful in this regard. So far, the maximum duration for which the transplanted gland remains functional has not been recorded more than a few weeks...

Concupiscence originates in mind and the body stimulated thereby participates in the sexual activities. But, the subtle hormonal secretion which is at the root of the normal functioning of the body is not affected either by the state or activities of the body or that of the conscious mind. The functioning of the endocrine system — in general, and the pineal or pituitary gland — in particular, directly, though latently, depends upon the intrinsic character, the inner self and the spiritual level of an individual. The sexual potential and inclination of one's body and mind develops according to the covering of *saṁskārs* — accumulated in the cyclic journey of the individual soul (*jīvātmā*) from one life to another — on the *kāmabīja*ᶜ. The associated hormonal activities too depend upon the refined state of the latter.

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19 Sex Commutation In Other Creatures

Golden fishes of the cleaner family are found in the Great Barrier Reef Sea of Australia. In a special variety of these fishes named Levroice, the male fishes are about 5 meters long and females are only up to 3 meters in length. The tendencies of the males in this family are quite quarrelsome but the females are gentle in general. The above species of fishes has a unique reproductive character because of which these fishes are considered as hermaphrodites. All the fishes of this family are born as females. They remain so for about two-third of their lives and then naturally transmute into males for the remaining period.

A male Levroice keeps about ten females in his harem. He keeps strict vigil on these fishes in his possession against possible attack by other males because the latters carry along as many females as captures by them during an attack. Sometimes, the members of the harem get bored and leave out in search of a new 'home'.... The male — the owner of the harem also keep strict eye on the females to prevent such escapes. If a male finds it difficult to bear this dual responsibility, the queen fish helps him from time to time in his guarding or defensive operations....

When the females lay eggs, their male partner and the queen help in hatching. There is no election or selection of the queen. The oldest of all the females in their population naturally takes over this responsibility because of her strength and experience. As she grows older and reaches the transition period, she begins to allure other females or frightens them and competes with their male partners. This change in her nature indicates that soon she will be transformed into a male. Her female organs shrink and disappear at this stage and masculine genitals begin to develop in her body at a rapid pace.

It is said that the nature of a male is outright different from that of a female; whatever types of genitals and sexual tendencies a creature is born with they define its gender, which cannot change in normal course.... The above species of fishes is indeed an exception in this

regard. It not only undergoes a change of sex in terms of the genitals and physique, its tendencies and overall life-style also changes accordingly.

Earthworms are most commonly found examples of hermaphrodites. Many insects are equipped with the mechanism to change their sex at will. They do so several times in a single life span. A male oyster becomes a female two years after birth. Zoological analysis of the experimental results of Dr. Orton has shown that the converted female oyster lays eggs as normally as the originally born females in this family. Most surprising is the fact that the converted female regains its male form just about a month after laying eggs.

There are many varieties of hermaphrodites found in the animal kingdom. But, the above kind of natural transformation is exceptional. Only the fishes of inaldendrious family have similar tendencies. None of these is a complete male or a complete female. Their bodies grow in size and weight along with the age. The oldest and the strongest one becomes the head that rules over the others the weaker ones. Among humans, the eunuchs have the incomplete characteristics of both the sexes but they don't have any reproductive capability and are therefore assigned a neutral gender.

The peculiarities of mutual dependence and the phenomena of interchange between the two sexes found in variety of creatures suggest that the division between the two sexes is not permanent. Variations in the mental tendencies, environment and circumstances can induce transformation of one into the other. The latter kinds of effects are seen in the human population too. The aptitudes, internal stature and makeup of mind and tendencies of an individual in the current life influence what type of gender he/she would be born-with in the successive lives.

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20 · Demarcation Of The Two Sexes Is Not Perpetual

God is prayed as "*Twameva Mātā Ca Pitā Twameva...*" — you are my mother and my father too.... HE is worshiped in the form of men and women both. The manifestation of God Shiva as *Ardha Nārīshwara* is represented as having half portion of the body resembling that of a woman and the remaining half as that of a man. This symbolizes that there is no distinction as male and female in the incarnations of the *Para Brahma* —The Supreme Consciousness presents itself in either form as per the needs of the time to manifest specific spiritual emotions.

The soul also exists in subtle form of consciousness far beyond the discrimination of sexes. It can be 'born' (manifested) as a male or a female in individual lives depending upon its previous *saṁskārs*. A dress wore by someone need not always remain in the same form... For example, a sari can be cut in the form of a shirt; handkerchiefs can be made from a slip..... The *jīvātmā* can also change its dress (body) in different forms.

An individual soul is born as a male or a female, according to the emotional impact and tendencies inherited — in the *mana*, *buddhi*, *citta* and *ahaṁkār* from its previous manifestation as a living being. Even during a single life, a person's or any creature's sex could be transformed into the opposite one if he/she has intense desire, intrinsic urge and inclination towards it. The *Puraṇās* cite many stories where a person born as a man in one birth became a woman in the next life...; or, where an individual had successfully changed his/her sex by practising specific *sādhanā*... These stories also illustrate the fact that sex of an individual is not eternal like his/her *prāṇa* and soul.

It is a common observation in human society that some men have feminine delicacy of the body and sentiments... while some women possess physical strength, loud voice, sturdiness, valor, ego, and other natural characteristics of men; many women have also made history by defeating the armed men in the battle fields.....

The existence of eunuchs, homosexuals and the occurrence of sexual transformations indicate that there is no permanent barrier of separation between the two sexes.

The distinction between man and woman exists only at the level of gross body. The soul existing in an individual is neither masculine nor feminine. The Upnishad cites —

Naiva Strī Na Pumaneṣu Na Caivādyaṁ Napůsakaḥ |
Badatmaccharī Mādante Ten-Ten Sa Yujyate" ||

Meaning: The *jīvātmā* is neither a female nor a male. It is not a eunuch either. Its manifestations can be compatibly attached to either of them, as per the 'type' of the body in any form of life.

Microorganisms and insects often manifest both the sexes. The separate development of both the sexes becomes dominant in higher — on evolutionary scale — organisms. This becomes most prominent in the humans. Thus, it appears that the distinction between the two sexes becomes most significant at the mental and emotional level as a result of which the gross body too develops in two different forms...

The peculiarities of nature observed in the cases of sexual transformations or co-existence of both the sexes remind us of the infinite possibilities of the manifestations of consciousness. Be that hormone driven psychological, physiological or anatomical changes of sex or any other characteristics, at the root of every such effect lies the power of *cetanā* which can manifest itself in infinitely many forms beyond the barriers of the laws of the physical world.

The difference between man and woman are significant only at the level of gross body. The subtle and astral forms — being closer to the soul, in both are indeed unified. Neither of the two sexes should consider itself superior to the other. Even the difference in their physical bodies, sex hormones and associated mental tendencies does not set a rigid barrier between the two sexes.

The sex of an individual is not permanently assigned to his/her soul. Existence of the soul is eternal; its manifestation is not. Someone born as a female may become a male in the present life by transformation in hormonal activities or could be born as a male in the next birth or vice-versa.

Talents, qualities, fortunes and social status of any one sex cannot be regarded as better than the other. Each has its own specialty and importance. None is inferior in any way. Both, man and woman should realize that they are complementary manifestations of a common source of consciousness and should work for the overall development of the society with the feelings of mutual respect, trust and co-operation.

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21 Intrinsic Source of Hormonal Secretions

Adept investigations of brain-functions and control of (Electro) physiological and biochemical activities at micro-subtler level have brought the existence of endocrine system in focus of scientific research. Ever since their discovery, the six principal and other glands of this system and their hormonal secretion activities have posed challenging research problems in biomedical and allied sciences.

Although, the chemistry of different hormones secreted by these tiny glands has been deciphered to a great extent, no peculiarity of stereo-chemical structures or binding reactions etc has been confirmed. The origin and mechanism of the marvelous regulatory functions triggered by small amounts of these hormones is yet to be unveiled in detail. Surprisingly, if the same hormones are injected into the blood externally, they lack the natural effects. Moreover, the partial supports (if any) provided by them are only temporary. As stated earlier, the effective success of transplantation of endocrine glands is far from sight at present.

The general principles of health, theories of biomedical sciences fail to explain why sometimes, despite no aberration at the anatomical (organ-level), physiological or biochemical levels, the harmonious balance of hormonal secretions in the body is perturbed and results in a variety of disorders in otherwise healthy individuals.... Experiments of stimulating or suppressing the disorderly functions of the endocrine glands have also proved to be futile. If one tries to block a naturally blown stream at some point then it would blow out with extreme force from some other point. A somewhat similar uncontrollability is observed in case of deficient glands.

Recent research findings show that the micro-level hormonal secretions generate electrochemical currents in the cells and thereby give rise to specific activities. This joint activity of the hormones and the cell-surface proteins is micro-subtle and creative in terms of effects like — the reaction of commingling of the sperm and ovum.

Long term dedicated research conducted by Dr. Julian McGuillen of Cornell University has shown how the deformation and disorder at the level of cellular functions results in a variety of diseases. Until past two decades, viral attack, infections, injury, alteration in mode of living etc were attributed to the manifestation of sickness. However, the instances of severe maladies in the absence of such gross level causes, provoked the scientific search for the possible causes at cellular and molecular levels. It was found that imbalance in the inter-cellular processing or inter cellular biochemical transmissions sometimes leads to the serious abnormalities like malignancy.

Effects of hormones were significantly noticed first in the case of extraordinary physique, growth and appearances etc. The example of Maxis, a weight lifter of Germany adds to the series of many instances adduced earlier in this context. The wrestler's body-weight was 147 pounds. He had exceptional power of weight lifting. During a show, he had lifted a 187 pounds man on one hand. He moved this man up and down about 16 times continuously while holding a glass full of water in his other hand. Surprisingly, not a single drop of water fell down during this show... The unshaken level of water demonstrated his extraordinary stability and balance in weight lifting.

The examples of supernatural effects of sex hormones cited in earlier sections also correspond to the manifestation of hormonal activities at the level of physical body. More remarkable are the subtle effects at the mental and emotional level. The neurohormones secreted from the galaxies of neurons in the brain play the principal role in generating these effects. The neuro-transmitters — hormones secreted at the synaptic connections between the neurons, as the name suggests, make possible the communication between the neurons and the information processing between the brain and the nervous system. The type and mode of secretion of these hormones is found to affect one's mental potential and feelings too.

The discovery of encephaline — a hormone of endorphin group had opened up new dimension of brain-research. This hormone is naturally generated in the brain as and when required to neutralize the

bio-electrical flows triggered by excessive emotional excitations or mental stress. When some scientists were working on the chemical reactions by which heroin and other intoxicating substances suppress the feelings of pain, they found the presence of some chemicals in the central core of the brain. The structure of these chemicals was so compatible to combine and react with the molecules of the intoxicating substances as if these were generated for this purpose only. This raised a natural question — why nature had arranged for such reactions? Investigations motivated by this quest led the scientists' duo – John Hughes and Trascoster Lyx of Scotland discover encephaline — the hormone whose chemical structure was quite similar to that of the heroin molecules.

Dr. Solomen Sneeder of John Hopkins medical school says that research on encephalon has been a milestone in the progress on treatment of many diseases which occur due to psychological disorders or mental pressure and strain. According to him, encephalon plays important role in relaxing the mind and maintaining mental strength. Those who make harmonious use of the internal secretions of the neurohormones — by maintaining mental balance, enjoy peace and happiness.

The encephaline and other endorphin hormones are found in those regions of brain and the core of spinal column which are connected with the centers which transmit the neuronal signals associated with the feelings of pain, sorrow and happiness; these centers are identified as emotional centers. Scientific views suggest that the ancient technique of acupuncture originated in China, the mechanism of *yoganidrā*, the methods of hypnosis, etc aim at activating specific centers in the brain to arouse the secretion of specific neurotransmitters like encephalon. The modern techniques of mental stimulation by transducers and psychotherapies by biofeedback, etc are also devised on this idea.

The unconscious activities of the human body are supposed to be regulated from the hypothalamus in the central core of the brain. Emotional currents, sentimental variations, etc, affect the functioning

of this center and hence affect the regulatory activities of the unconscious mind which are essential for the healthy survival of the body. Modern scientists have made remarkable progress in identifying the key roles of hormones in regulating the physiological and psychological functions. However, they have not been able to infer much about the origin of hormonal secreting abilities of the ductless glands and neuronal connections.

Ancient Indian scientists had described the astral and subtle bodies as the basic source of all micro and macro level functions in the gross body. The hormonal secretions, under this consideration, correspond to the manifestations of the intrinsic activities of one's consciousness. Hormones are the carriers of the potentials bestowed by the subtle source of *cetanā* on the brain and the gross body.

If the malice of evil tendencies covers the purity of the soul, the associated wretched thoughts and emotions would trigger the corresponding unhealthy effects on neurohormonal secretions. For instance, the master endocrine glands would emit excess of the hormones, which stimulate concupiscence in the individuals who have unchaste character and who enjoy erogenous thoughts and carnal pleasure. Such people remain sensuous even in the old age. The inherited erotic tendencies of these people, if assimilated in the inner core of the mind, would be carried over — through the subtle and astral bodies in the next birth too; it would then be reflected in an untimely (early) commencement of puberty.... On the contrary, in an ordinary person, the source of pleasures, amorous sentiments and joy might be blocked completely because of sudden stoppage in associated hormonal supply due to the shocking blow caused by a tragedy, betrayal, assault, insult or emotional blackmailing, etc......

Those who are born with serene *saṁskārs* — inculcated tendencies of pious virtues and eminent endeavors — are naturally gifted with the associated positive effects on the endocrine system. Others may attempt cultivating these by sincere adoption of disciplined life. The lives of accomplished yogis and great personalities illustrate that — the arousal of pure intellect, prudence and discernment of mind, and

matured understanding about the futility and adversities of sensual pleasures and selfish passions and attachments helps ideal functioning of the endocrine glands. This supports maintaining healthy hormonal secretions to facilitate culmination of one's physical, intellectual and emotional potentials in the direction compatible with his or her intrinsic character... And paves the way for spiritual elevation too.

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[1]The panca tatvas are — *Pṛathvī* (solid matter on or inside the earth), *Jala* (water and fluids), *Vāyū (air)*, *Agni* (fire or any source of body-energy), and *Ākāsha* (the subliminal expansion of ether).

° A divine tree described in the *Purāṇas* as the source of fulfillment of all desires.

Swādhyāya refers to — acquiring knowledge about noble ideals and duties of life by intense reading of enlightening books and inspiring thoughts of great personalities, or by focused discussions with saintly scholars or spiritually elevated persons. It also includes contemplating and analyzing one's own character to adopt realistic ideals in day to day life.

[2] The subtle center above the *ṣaṭ cakras* (extra sensory centers in the endocrine) and symbolized as a lotus with thousands of palates — representing a majestic source of thousands of streams of the inner force of consciousness.

[3] The six extrasensory energy centers in different plexuses along the interior spinal column and the endocrine channel.

[4] Inlets in the upper layer of the cerebrum, for the reception of cosmic energy through dedicated spiritual experiments of *Yoga Sādhanās*.

[5] Place of worship of the Parasis.

[6] The eternal source of *prāṇa* in the sex-element.

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EVOLUTION OF A DIVINE MISSION: Chronological Compendium

The divine soul of Pt. Shriram Sharma Acharya descended on September 20, 1911 as the son of Pt. Roopkishor Sharma and Mata Dankunvari Devi in Anvalkheda (Dist. Agra). That his saintly heart breathed for the welfare of all living beings was clearly expressed, since his childhood, by his altruist service of the poor, weaker and down trodden ones around him. Mahamana Madan Mohan Malviya bestowed the initiation of *Gāyatrī Mantra* on him when he was 9 years old. January 18, 1926, on the auspicious day of Vasant Panchami, the sacred flame of the *dīpaka* (lamp) flashed the subtle body of his Guru – a great *yogi* of the *rishi* age – during his *Gāyatrī Sādhanā*. This had sparked the unfolding of the divine origin and purpose of his life and enlightened it with the grace and guidance of his Guru. [This *akhand dīpaka* is kindled since then and is enshrined at Shantikunj, Hardwar.]

The next 24 years of his life were devoted to ascetic endeavors of 24 *Mahāpuraścaraṇas* — each of 24 lacs *Gāyatrī Mantra Japa* (the highest kind of spiritual *sādhanās* of *Gāyatrī*). He had also sincerely participated in the freedom movement of India[1] under the noble guidance of Mahatma Gandhi during this period while continuing with his altruist services to the society and attending to the familial duties too.

The unique experiment of *Vicāra Krāntī* — gradual refinement of thoughts, righteous transformation of attitude and sublime transmutation of human psychology up to the high realms of spirituality — was initiated by Acharya Sharma from the day he wrote the first issue of *Akhand Jyoti* in 1937. The subscriptions of this magazine (in Hindi and translations in English and tens of regional languages) have expanded exponentially since then....

His wife, Smt. Bhagavati Devi Sharma was also born in 1926 – the year, when the afflatus of his Guru was realized and the year, which

is described by Sri Aurobindo as that of the renaissance of divine force on this earth. Ever since their marriage in 1943, this *rishi* couple dedicatedly pursued the noble mission for arousal of human glory and revival of divine culture.

Pt. Sriram Sharma had established the Gayatri Tapobhumi at Vrindavan Road, Mathura and performed the *purṇāhuti* of his *mahāpuraścaraṇas* there in 1953. He had organized a grand *Gāyatrī Yagya* in 1958. This *Gāyatrī Yagya* was a unique experiment towards renascence of spirituality in human life. This also initiated propagation of the knowledge of *Gāyatrī Mantra* and *Yagya* in scientific light and laid the foundation of *Yug Nirman Yojna* — architecturing of a bright era of moral, cultural, intellectual and spiritual evolution. In another couple of years he had translated the entire Vedika Literature in Hindi and presented the first ever, comprehensive volume on the science and philosophy of *Gāyatrī Mantra* and *Gāyatrī Sādhanās*. Savants like Dr. S. Radhakrishanan and Acharya Vinoba Bhave had honored his contributions as historical and recognized him as *Vedaniṣṭha*.

The saintly lives of Acharya Sharma and his wife, the spiritual charge of their personalities and the inner power of their sacred love for all beings, had attracted all the readers of *Akhand Jyoti*, and all those, who had attended this *yagya*, to work for the noble cause of his great mission. This is how the "larger family" kind of organization — called "**Gayatri Pariwar**", came into existence. This has now expanded across the globe beyond the barriers of religion, creed, caste, sex, socioeconomic status or educational background.

Acharya Sharma — the *rishi* of this age, had projected the **Yug Nirman Yojna** in 1962 as determined plans of his divine mission of ushering into a bright era. The period of 1971-1990 has witnessed remarkable accomplishments of his life on multiple facets. He had climbed the arduous and mystic heights of the Himalayas several

times and stayed there for specific *sādhnās* as per the guidance of his Guru. He pioneered the resurrection of the *rishi* culture by simultaneous renaissance and expansion of the reformative and constructive endeavors of all the *rishis* of the *vedik* age.

He instituted the mission's fraternity at Shantikunj, Hardwar as an academy for moral and spiritual awakening and training and its research wing Brahm Varchas as a center for creative integration of the modern science with spirituality, in 1971 and 1979 respectively. Regular short-term and long-term interactive training programs for – – personality development, spiritual refinement through *Gāyatrī Sādhanā* and perfection in the art of living, commenced at Shantikunj in the early eighties. The 2400 Shaktipithas spread across the country also became functional as distributed centers for social reforms and training of *Pragya Yoga* under the banner of the mission with this advancement.

Around the same time, Gurudev Shriram Sharma wrote the *Pragya Purana* as the 19th in the series of the eighteen Puranas of the Vedika Age. This was another remarkable addition to his monumental contribution of over 3000 books and volumes on the gamut of topics concerning human life. Mass education from religious platform and efforts for uplifting the status of women in India gave revolutionary boost to the reformative and constructive programs of the Yug Nirman Yojna in this period.

During 1984-1986, he endeavored the unique spiritual experiment of *sukśmīkaraṇ* —subtlization and sublimation of vital force and physical, mental and spiritual powers. He authored a special set of 24 books (*Krāntidharmī Sāhitya*) highlighting the future of the world and conveying the message of time to prepare us for the realities stored in the distant depths of the 21st Century..... On the 2nd June, 1990, he left the physical sheath of his being and magnified his sublime powers up to the higher realms of divinity in order to enlighten the subtle world of people's thoughts and sentiments......

There after, Mata Bhagavati Devi had guided the series of *Ashwamedha Yagyas*, which accelerated the global expansion of the mission with great impact, in the critical juncture of the decade of change of a millennium and change of an era. She too joined Acharya Sharma in the subliminal domains of divinity after leaving the physical body on the 19th September 1994.

The light of righteous knowledge and human glory kindled by them continues to illuminate the excelling path of their great mission and promises the descent of "The Age of Truth" in the years to come.....

[1] A postal stamp was released by the Govt. of India in 1992 to honor his great services to the nation.

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